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PAROXYSMAL ABDOMINAL PAIN

A FORM OF EPILEPSY IN CHILDREN

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Very little is known in man about the cerebral representation of the vasomotor and visceromotor mechanisms and their sensory counterparts However, animal experimentation points to the existence of neuronal chains concerned with these functions at almost all levels of the brain, and clinical evidence exists as to their involvement in disease and dysfunction of the brain

Dysfunction of cortical and subcortical structures in man in many instances leads to changes in the electroencephalogram In many cases diencephalic and particularly thalamic disorders have been known to influence the cortical electrical activity This is particularly true for epileptic manifestations in the widest sense

The present study deals with a group of patients in whom paroxysmal visceral symptoms were the presenting complaint The first 12 of these patients were seen about 10 years ago at the Babies Hospital and the pediatric service of the Vanderbilt Clinic[1] During the intervening 10 years we have added 19 cases to the group, and gradually the clinical picture has become clearer

All the children have said they had abdominal pain that in almost all instances has been periumbilical and epigastric In some instances it radiated to the lower quadrants or the flanks It has practically always been sudden in onset, of a severe nature, and has been described as colicky or knifelike The pain lasted a few minutes to several hours In several cases bouts of pain recurred several times in the course of two or three days The pain has been associated in most instances with other gastrointestinal symptoms, such as anorexia, nausea, vomiting, diarrhea, or, less frequently, constipation Sixteen of our patients fell asleep after an attack of abdominal pain no matter what time it occurred and slept for several hours even in the middle of the day Twelve patients said they experienced headache, lateralized in two cases, associated with an attack Nine patients had fever with the attacks, and seven had drooling and sweating

In addition to the attacks of abdominal pain, many of the children have shown abnormal traits In 17 there was an abnormal degree of irritability and other behavior disorders In 12 there were multiple vasomotor disturbances, such as blanching, flushing, and lability of blood pressure In two of the children peripheral vasoconstriction and cyanosis have been observed between attacks In four patients some of the attacks have been associated with cyclic vomiting, and the children were admitted in severe states of dehydration and acidosis

The clinical symptoms were not explained by the usual diagnostic procedures, the results of which were negative or showed insignificant changes On the other hand, the paroxysmal nature of the attacks, the post-paroxysmal sleep, and the fact that they occurred in groups suggested a similarity in pattern with epilepsy and, considering the possibility of a cerebral origin for the syndrome, a systematic study of electroencephalographic changes was made As a result of these studies it was found that all the patients but one showed grossly abnormal cerebral electrical activity

CLINICAL DATA

Thirty-one patients were seen in this series There was no sex preponderance, there being 16 boys and 15 girls in the group Twenty-six of the children were normal, spontaneous, full-term deliveries One had been born prematurely, weighing 4 lb (1,814 gm) at birth One was overterm, and delivery necessitated the use of high forceps, which resulted in a permanent left temporal scar In one case internal version with forceps was needed In two other instances prolonged labor was terminated by forceps delivery Early development was reported as delayed in four children The onset of the attacks could usually be traced to early infancy In a few they began after the age of 6 yr and in one after 11 yr The patients had the usual childhood diseases without complications except for one case of unspecified encephalitis and two

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[1] Klingman W O Langford W S Greeley D M and Hoefer, P F A Paroxysmal Attacks of Abdominal Pain Epileptic Equivalent Tr Am Neurol A 67 228 1941

cases of pertussis encephalitis In two instances the onset of the syndrome occurred just after the illness In one patient attacks of abdominal pain started 2½ years after an attack of pertussis encephalitis However, this patient had had a series of convulsive attacks at the time of the encephalitis Convulsive phenomena preceding or accompanying the onset of abdominal pain were also seen in three other children One of these had a single unexplained convulsion a year prior to the onset of abdominal pain A third patient had psychomotor attacks for about eight years preceding her first attack of abdominal pain The onset of grand mal, petit mal, and psychomotor equivalents coincided with the onset of abdominal pain in still another child No other significant features were established in our patients' past histories In the family histories of the children epilepsy occurred three times, behavior problems, three times, and migraine and abdominal pain, each twice Two of our patients were sisters

Except for the multiple signs of autonomic imbalance, physical examination revealed few abnormalities Members of the group as a whole appeared underdeveloped, immature, and small for their chronological age However, no clearcut abnormalities were found except for a facial tic in one patient and shortening of the left upper extremity—associated with a Davidoff-Dyke-Masson deformity of the skull—in another The mental examination deserves to be mentioned only in two respects First, intelligence quotients were found to be scattered over a wide range from 70 to 160 (Wechsler-Bellevue test), second, there was a high incidence of abnormal irritability and behavior disorders that has already been mentioned No overt psychotic manifestations were found in any member of the group

Of the diagnostic procedures performed in this group, routine laboratory studies of blood, urine, stool, and, in a few cases, of the spinal fluid were negative Tuberculin tests were done in 26 patients and were found positive in two X-rays of the skull were obtained in eight patients, in four of these in conjunction with air studies In one of these an enlargement of the left lateral ventricle was found, in another the findings were those of the Davidoff-Dyke-Masson syndrome Pyelograms in 24 patients and gastrointestinal series in 20 failed to show any significant structural changes However, transient abnormally fast peristalsis and pylorospasm were each seen three times In one patient the two occurred together

Electroencephalographic studies showed definite abnormalities in 30 patients and a "borderline normal" record in one A breakdown according to frequency and pattern of the electroencephalograph observations revealed that of the 30 patients with abnormal activity the records were basically normal in two, while 28 had basically slow activity ranging from 2 to 7 cps; in addition, 16 of these had rapid or spike activity or both (15 to 30 cps), and four had frank spike-and-wave bursts In response to hyperventilation all but one, who was unable to cooperate had further slowing and increase in amplitude of the slow activity, usually with the appearance of synchronous bursts The same type of response to hyperventilation was found in the two patients with basically normal electroencephalograph activity No clearcut focal signs were found in any of our records It should be noted that none of these patients had electroencephalographic studies performed during an actual attack of abdominal pain

Synchronous discharges of high voltage slow waves and spike-and-wave bursts are the two main criteria for epileptic activity An over-all incidence of abnormal electroencephalographic activity, both specific and nonspecific, of almost 97%, as found in our patients, must be considered positive evidence of the cerebral and presumably paroxysmal origin of this particular disease entity This figure compares well with those obtained in highly selected groups of established epileptics in our own and other laboratories [2] The observations in normal and nonepileptic children of the same age groups similarly tested differ significantly from those presented here

In a recent case, not included in this series, the clinical and laboratory picture presented physiological evidence of a specific cerebral mechanism by which transient paroxysmal abdominal pain can be produced A girl of 15 said she had headache and severe migratory abdominal pain On repeated neurological examination nystagmus associated with inability to perform upward gaze was noted on one occasion The electroencephalogram showed synchronous bifrontal discharges of high voltage, 3 per sec activity (Fig 1) During one of her attacks of pain a gastrointestinal series was performed On this occasion a transient episode of intussusception of the terminal ileum was observed One loop of ileum in the right abdomen showed a localized narrowing in which two longitudinal mucosal folds could be recognized These folds could be identified as extending into a slightly dilated adjacent portion of the ileum, where the transversely arranged mucosal folds surrounded the thinned longitudinal folds This appearance is characteristic of an ileo-ileal intussusception (Fig 2) This and two similar areas were observed in the same examination But there was no evidence of intussusception on an examination repeated eight days later, at which time the patient was asymptomatic [3]

COURSE

Twenty-one patients were followed for periods up to 10 years Among these were eight of the original group of 12 patients Two others of this group died, one in an accident, the other one of mesantoin® (3-methyl-5,5-phenyl-ethyl hydantoin) intoxication during a period of intractable grand mal epilepsy

In nine of the 21 children attacks of abdominal pain subsided completely at adolescence In five others distinct improvement was found in that the attacks have recurred much less often and have been much milder In five others the condition has become worse

Frank epileptic manifestations occurred in nine of the entire group of 31 patients Four, as stated previously, had attacks preceding the onset of paroxysmal abdominal pain All four still have epileptic seizures, three with abdominal pain as aura, while the last one of this group no longer has attacks of abdominal pain in any form Five other patients began experiencing epileptic seizures several years after the onset of the abdominal pain syndrome To this group belongs a patient who died of mesantoin® intoxication Another patient had petit mal attacks that have since subsided The remaining three still have seizures but no abdominal pain

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[2] Hoefer P F A Hoff H H, and Pluvinage R I L Effect of Anticonvulsant Therapy on Electroencephalogram of Patients with Idiopathic Epilepsy T Am Neurol A 72 185 1947

[3] Courtesy of Dr Lois Collins of the Department of Radiology College of Physicians and Surgeons

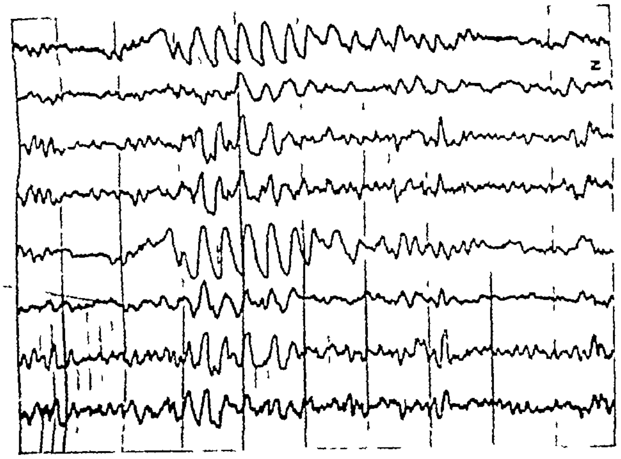

Fig 1.—G H 14 years of age Especially during hyperventilation the record shows high voltage 3 per sec activity with bifrontal preponderance often in synchronous bursts The tracings are from the right frontal right temporal right parietal right occipital left frontal left temporal left parietal and left occipital areas

Electroencephalographic records were obtained at intervals in 20 patients of the group that was followed up to 10 years The electroencephalograms of eight patients were normal, three were mildly abnormal, and nine persistently abnormal In six of the persistently abnormal records 3 cps activity was seen in response to hyperventilation, and one showed spike-and-wave groups These follow-up studies could be fairly well correlated with the clinical course, in that normal or near-normal records were obtained in patients in whom the symptoms had subsided

Anticonvulsant therapy was tried in eight of the patients who had abdominal pain not associated with clearcut epileptic attacks However, in no patient in our group was therapy administered for a sufficiently long period to allow proper evaluation In a few instances an impression of temporary improvement has been recorded

REPORT OF CASES

Case 1 —B M, a 6 year-old girl, was first seen at the Vanderbilt Clinic on Oct 23, 1945 During the previous two years she had had between 15 and 20 episodes of abdominal pain associated with nausea, vomiting, and malaise. The attacks recurred every five months, lasting five minutes to several hours, and 12 or more occurred during a period of two or three days A typical episode resembling status was described in May, 1946, as follows

The patient, who had been perfectly well before going to bed, was awakened by an attack of abdominal pain at 1 a m She had seemed to have been having a nightmare prior to this She then cried out and said she had frontal headache Almost immediately, sharp, cramping periumbilical abdominal pain followed, with the patient doubled up and screaming The pain lasted about five minutes, during which time she vomited her evening meal After five minutes relief she had another attack, this time lasting five minutes She then fell asleep but was again awakened at 4 a m with another series of three or four paroxysms of pain and vomiting The patient appeared to be stuporous and fell asleep until 6 a m., when the attacks recurred

Six weeks prior to this episode the patient was seen to snap back" and become "stiff" during a vomiting spell She became deeply stuporous for 10 min and could not be awakened She then went into a deep, heavy sleep from which she could be aroused only with difficulty

Past history revealed an attack of pertussis at the age of 4 years immediately preceding the onset of her attacks of abdominal pain

Her family history was noncontributory, except that a baby sister of 13 mo had breathholding" spells

Examination The patient was thin, normally developed, retiring, and fearful She had considerable abdominal spasm and pain The general physical and neurological findings were otherwise normal Urinalysis showed the presence of acetone (3 +) The electroencephalogram record revealed numerous high voltage synchronous spike and-wave bursts preceded by brief showers of spikes (Fig 3*A*) There were no other positive laboratory observations

Course The patient s acute symptoms subsided spontaneously, and her urine became acetone-free on supportive therapy Subsequently, her attacks began to come at shorter intervals There was no clearcut relief on various anticonvulsant drugs [phenobarbital, diphenylhydantoin (dilantin®), trimethadione (tridione®), mesantoin,® and mephobarbital (mebaral®)], though at one time she was reported to be free of symptoms for a period of nine months Recently two additional symptoms have developed "tremor of the hands' and a variety of psychomotor episodes, including fully creditable fugue states, forgetfulness, and the like In addition, she showed various behavior disorders, moodiness, scratching or biting other children Her last electroencephalogram, taken in February, 1950, when she was 10½ years old, was only mildly abnormal and without convulsive patterns (Fig 3*B*)

Case 2 —T L, a boy 8 years old, entered the Babies Hospital on July 8, 1940 He said he had had frequent episodes of abdominal pain for one year Onset occurred during convalescence from pneumonia, after which attacks recurred repeatedly from one to five times a week He had an aura of a "noise in the head" or transient headache This was followed by rather severe periumbilical pain lasting a few seconds and associated with rigidity of the hands and momentary loss of consciousness The patient then fell asleep for about 10 min and on awakening was clear mentally but had a rather "glassy stare" in his eyes

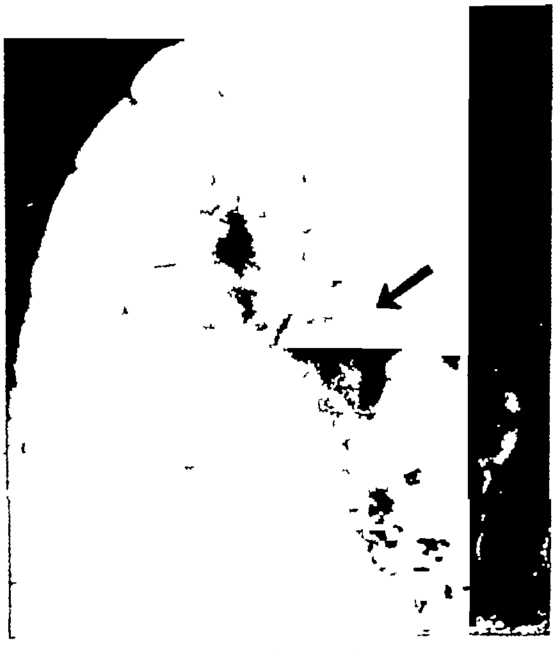

Fig 2.—Ileo-ileal intussusception indicated by arrow See x ray report in the text.

Examination The patient was well nourished and well developed, overactive, and combative The general physical and neurological findings were normal Tuberculin [illegible] 1 mg) was positive A chest x ray was reported as negative Gastrointestinal series revealed no evidence of organic disease of the gastro intestinal tract, but there was some decrease in tone of the lower small intestine, a low cecum, and hypomotility of the ileum

The electroencephalogram showed medium to high voltage, rapid activity in both frontal areas and somewhat less in the parietal areas Irregular medium 4 to 5 per sec activity was seen mostly in the occipital areas Occasional synchronous bursts of high voltage 3 to 4 per second activity appeared, especially with hyperventilation (Fig 4*A*)

Course Abortive grand mal (slight convulsive movements of both arms and right leg with loss of consciousness) later developed in the patient Abdominal complaints decreased in frequency and intensity, and the patient had only five mild attacks in one year, although he had stopped taking anticonvulsant medication After diphenylhydantoin was reinstituted, the patient was symptom-free for several months, and attacks usually occurred when medication was omitted

An electroencephalogram taken at this time, March, 1945, showed considerable improvement It was still abnormal but revealed no paroxysmal patterns The record was diffusely irregular, with a small amount of rapid activity limited to the frontal leads and a large amount of slow 4 to 6 per sec disorganized activity, both mostly of low amplitude There was not much change with hyperventilation (Fig 4*B*) No subsequent electroencephalographic studies were done

Frank grand mal uncontrolled by anticonvulsant therapy then developed in the patient He was again hospitalized because mesantoin® sensitivity and aplastic anemia with septicemia developed He continued a downhill course and died in February, 1948

The autopsy, including gross and microscopic examination of the brain, showed evidence of acute toxic-infectious disease There were diffuse cortical changes consistent with severe grand mal attacks and no signs of any focal lesion

Case 3 —W S , a 12-year-old boy, was seen at the Vanderbilt Clinic in January, 1940 At the age of 7 years he began to have attacks of headache, buzzing in the ears, nausea, and vomiting with abdominal pain every two to four weeks Each episode lasted 30 min and was followed by sleep for four or five hours He was perfectly well on the next day Past history was noncontributory except for food allergy (hives) and one episode of sleepwalking

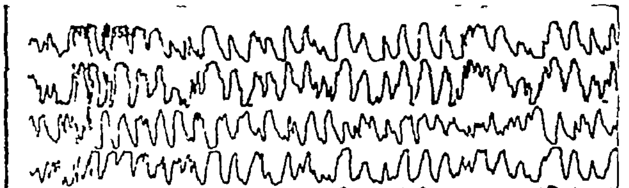

Fig. 3 —*A* B M 6½ years of age Synchronous burst of high voltage somewhat atypical 3 per sec spike and wave activity preceded by a brief shower of spikes The end of the run shows mostly wave activity Time for 1 sec and calibration for 50 µv are indicated *B* B M 10½ years of age Th [illegible] ly irregular with some slow activity in both frontal [illegible] trips the tracings are from the right frontal right pari [illegible] left frontal left parietal and left occipital areas)

Examination —The general physical and neurological findings were normal Electroencephalographic studies revealed a striking response to hyperventilation with almost immediate slowing to synchronous, high voltage 3 per sec waves from a reasonably normal background [illegible] several occasions synchronous bursts of 2 to 3 per sec activity were seen This response came on within seconds (Fig 5)

Course On diphenylhydantoin the patient had no attacks for almost three months The drug was then discontinued for a similar period, and during this time he had six attacks Diphenylhydantoin therapy was resumed, and again he was free of symptoms while he was receiving this medication Subsequently, the attacks subsided spontaneously, and he was discharged without any further therapy The patient did well in his studies, having won a four-year scholarship at high school On July 10, 1942, while delivering newspapers on a bicycle, he was hit by an automobile and killed

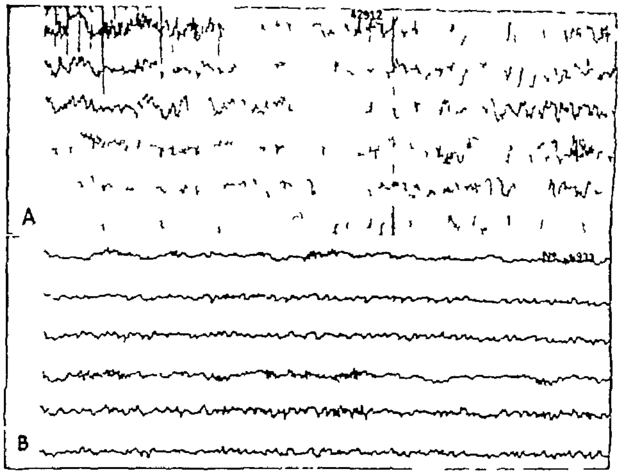

Fig. 4 —*A* T L. 8 years old The record shows two striking abnormalities Mostly medium voltage 25 per sec activity is seen in both frontal areas while irregular mostly medium voltage 4 to 5 per sec activity occurs in the other leads On one occasion a synchronous burst of slow activity is recorded in all the leads *B* T L 13 years of age The record is irregular with some persisting rapid activity in the two frontal areas and low voltage disorganized slow activity in the other leads. The time and calibration and sequence of tracings is as in figure 3

Case 4 —C McC , 7-year-old boy, was first seen at the Vanderbilt Clinic in January, 1936 He had a history, starting at the age of 2½ years, of severe frontal headaches frequently lateralized over the right eye and always associated with nausea, vomiting, and abdominal pain The attacks, which recurred every two months, were followed by sleep for a few hours, and when he woke the patient vomited with relief of the headache At 11 years he had three episodes of nausea and fainting while in church In addition, he was very restless during sleep, "talking and raving" and sleepwalking In March, 1939, he was treated for a fractured elbow incurred in a fall during a somnambulistic episode Past history suggested allergic rhinitis for one year when he was 10 years old Family history was significant only in that his mother had hay fever

Examination The patient was thin, well developed, irritable, and restless but cooperative The general physical and neurological observations were normal Electroencephalogram showed in the first part of the record quite irregular activity, with a good deal of poorly formed 5 to 7 per sec activity of medium voltage, and low voltage 15 to 20 per sec activity Occasional synchronous bursts of slow activity were seen There was a striking response to hyperventilation with bursts and long runs of very high voltage 2 to 3 per sec waves The patient s symptoms gradually subsided, except for occasional mild frontal headaches and persistent irritability When last seen in February 1950, he was a tall, asthenic 21 year-old man with a responsible job He had completed one year of college An encephalogram taken at this time revealed mild irregularities especially with hyperventilation, but the record was otherwise normal

Case 5 —E T , a girl of 8 years, was seen at the Babies Hospital in November, 1940 Since the age of 1½ years and after a fall she had experienced severe generalized periumbilical, and epigastric pains The attacks varied in frequency between once a week and once a month were followed by pallor, yawning, and malaise, and were associated with nausea, vomiting, constipation, and temperature to 104 F The abdominal pain was cramplike at the onset of an episode, then increased until it felt "like knives sticking", and her abdomen became rigid and extremely tender The pain gradually subsided, only to recur repeatedly The whole episode usually lasted a day, and during this time the patient felt drowsy and occasionally went into a deep slumber On the day prior to an attack the patient s face was flushed

Past history revealed allergy to various foods, including chocolate, but dietary restrictions and 'injections" did not relieve her symptoms An appendectomy was performed when she was 3½ years old

Examination The patient was a small, thin girl who was well oriented and cooperative The pulse was 104 the blood pressure was 118/72 A soft systolic murmur was heard at the apex Gastrointestinal series showed reflex pylorospasm When repeated at a later date it was reported to be negative The electroencephalogram record was mildly abnormal Single, large, slow waves of frequencies between 3 and 4 per sec were seen in both occipital leads, occasionally with a vague suggestion of a slow spike and wave pattern In the two frontal leads short bursts of fast activity were noted With hyperventilation a moderate increase in incidence of the slow waves was noted, and on one occasion a short burst of moderately high synchronous slow waves was seen

Course The patient's symptoms have continued without significant improvement, although the abdominal pains are said to be less severe A trial of antihistaminics brought no relief Her subsequent electroencephalograph records, however, have all been essentially normal with no response to hyperventilation Although 18 years old, the patient is a small, underdeveloped girl who looks like one of 14

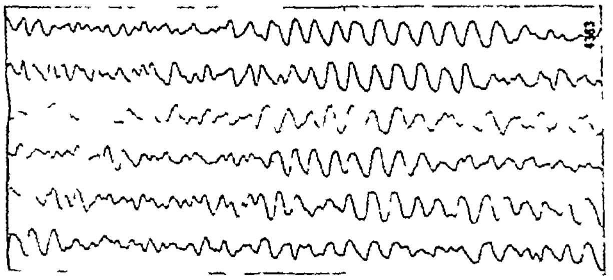

Fig 5—W S 12 years old During hyperventilation the record shows high voltage 3 per sec activity Tracings are from the right frontal right parietal right occipital and the left frontal left parietal and left occipital areas

Case 6—A H B, a 12-year-old girl, was first seen at the Vanderbilt Clinic in November, 1941 At 2½ years she began to have occasional episodes of falling to the floor with rolling of the eyes These were followed by spells consisting of change of expression and pallor of the face, the patient lying down quietly and becoming limp These attacks occurred during the next nine years every 12 to 15 mo and were preceded by an aura of dizziness and 'blackout ' Since December, 1940, the episodes have increased in frequency to three times a month, starting with severe periumbilical, cramplike abdominal pains associated with anorexia and followed by sleep for two hours

Past history was significant in that the patient was premature, weighing 4 lb (1,814 gm) at birth She had had infantile diarrhea and marasmus Development was delayed, the patient did not talk until she was 3 years old, and enuresis persisted until that time She was allergic to chocolate Family history, extending back to both maternal and paternal grandparents, revealed epilepsy, prostitution, indigence, feeblemindedness, shiftlessness, and capital crime All the patient s ten siblings were feebleminded or of borderline intelligence

Examination The general physical and neurological findings were normal The electroencephalograph record showed fair alpha activity on the right, poor on the left side A good many slow waves (3 to 5 per sec) of moderately high voltage were seen in both occipital leads but definitely more on the left side With hyperventilation a distinct increase in amplitude occurred with a definite additional slowing Synchronous bursts of very high voltage irregular 3 to 5 per sec waves were seen repeatedly, lasting for more than six seconds In addition, runs of the same type of waves occurred in either occipital lead alone but again definitely more on the left side

Course The patient's attacks subsided on diphenylhydantoin When medication was discontinued in June, 1942, she remained free of attacks until November, 1946 At that time the attacks recurred, and she was again placed on diphenylhydantoin, 0 1 gm twice a day Episodes were reduced in number to about two a year In the summer of 1949 she had a grand mal seizure preceded by an aura of abdominal pain The patient is now a 21-year-old housewife, who is short and obese, and shows much irritability and vasomotor lability Her most recent electroencephalogram record is somewhat disorganized without being clearly abnormal There is a persistent difference between right-sided and left sided alpha activity A few runs of disorganized 5 per sec activity are seen, especially on the left side, at the end of and after hyperventilation

COMMENT

Fulton, Kennard and Watts[4] found that stimulation of the rostral portion of the premotor area causes increase in peristalsis Extirpation of the same region leads to slowing of visceral motility and in some instances intussusception, as shown by Watts and Fulton[5] Mettler and associates[6] made similar observations and found ulcers of the stomach at autopsy in animals with long-standing ablation of the frontal lobes More recently, Spiegel and associates[7] found that gastrointestinal motility in dogs could be influenced from areas 5 and 3 in addition to the premotor area 6 and occasionally area 4 but in their experience from no other point of the cortex Correll, Greenberg and Pool[8] produced massive intussusception as the result of repeated bilateral stimulation of the cingular gyrus just above the splenium of the corpus callosum in one unanesthetized cat The same animal had generalized convulsions in response to the stimulation on this occasion

While the experimental observations were concerned with the results of cortical stimulation and ablation, Cushing[9] and Grant[10] reported gastric and duodenal ulcers in patients with tumors of the interbrain

In the realm of epileptic phenomena, epigastric pain as an aura preceding grand mal attacks was described by Gowers,[11] who in his book "The Borderland of Epilepsy" differentiated it from vagal and vasovagal attacks, epigastric sensations of oppression or fullness Oppenheim[12] in discussing earlier authors' concepts of "larval" epilepsy including "gastric disturbances" thought the evidence was "most uncertain " Patrick and Levy[13] described paroxysmal abdominal pain, mostly in infancy and childhood, as a "fore-runner" of true grand mal seizures in 13 out of 500 cases, in six of which it became the aura Watts and Frazier[14] described the cases of two patients, one a boy of 8 years, in whom nausea, epigastric distress, and vomiting were often substituted for true convulsive seizures Wechsler[15] recognized abdominal pain separate from nausea and projectile vomiting as a symptom of brain tumor in a small series of verified cases Penfield[16] described epigastric pain as an unspecific aura associated with many different types of seizures, such as autonomic, petit mal, Jacksonian, and hallucinatory In some of these the localization of the subsequent seizures was presumably diencephalic, in others cortical temporal, central, or parietal According to Penfield, epigastric aura has no localizing value

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[4] Fulton, J F Kennard M A and Watts J W Autonomic Representation in Cerebral Cortex Am J Physiol **109** 37 1934

[5] Watts J W and Fulton J F Intussusception Relation of Cerebral Cortex to Intestinal Motility in Monkey New England J Med **210** 883 1934

[6] Mettler F A Spindler J Mettler C C and Combs J D Disturbances in Gastro-Intestinal Function After Localized Ablations of Cerebral Cortex Arch Surg **32** 618 (April) 1936

[7] Spiegel E A Weston K and Oppenheimer M J Postmotor Foci Influencing Gastrointestinal Tract and Their Descending Pathways J Neuropath & Exper Neurol **2**:45 1943

[8] Correll J W, Greenberg I M and [illegible] published

[9] Cushing H Peptic Ulcers and Interbra[illegible] Su[illegible] Gynec & Obst **55** 1 1932.

[10] Grant F C Brain Lesions and Duode[illegible] Cases Ann Surg **101** 156 1935

[11] Gowers W R. Borderland of Epil[illegible] Fain[illegible] Attacks Vertigo Migraine Sleep Symptoms, and Their [illegible]elphia The Blakiston Company 1907

[12] Oppenheim H Lehrbuch der Nervenkrankh[illegible] für Aerzte und Studierende ed 5 New York S Karger 1908

[13] Patrick, H T and Levy [illegible] and in Others, J A M A **82**:375 (Feb 2) [illegible]

Robinson[17] studied 100 epileptic patients by gastrointestinal x-ray series Twenty-three of these patients had some type of gastrointestinal aura However, only three had gastrointestinal abnormalities Eleven others showed structural or functional abnormalities of the gastrointestinal tract but had no gastrointestinal aura

Moore in several recent publications[18] has described several cases of patients with symptomatic or in one case idiopathic attacks of abdominal pain of cerebral origin, some with electroencephalograph findings suggestive of paroxysmal disorder None of his patients were infants or children

Delay[19] has recently described a patient 19 years of age, a congenital syphilitic in whom abdominal pain in attacks, vasomotor changes and an abnormal electroencephalogram with suggestive left temporal focus developed This patient had striking relief from his attacks on anticonvulsant medication

Lambert[20] in a study of 25 children with abdominal pain stresses psychodynamic mechanisms in preference to an organic epileptic etiology in spite of the fact that 12 of his patients had abnormal electroencephalograms, three of these with frank convulsions Furthermore, two of the children had evidence of "spastic colon" by x-ray studies and one had Sydenham's chorea

Our reasons for including the syndrome described in this study among the manifestations of epilepsy in the widest sense may well be reviewed at this point The attacks of abdominal pain are episodic in nature and often grouped in a status pattern In many instances the attacks are followed by episodes of sleep of several hours' duration, often in the middle of the day Several of our patients had brief periods of unconsciousness or other seizure fragments associated with the attacks of pain Abnormal electroencephalographic patterns were found in 97% of our patients in "interseizure" records Finally, nine of our patients had frank convulsive seizures

Response to anticonvulsant therapy in patients without frank convulsive manifestations has been equivocal in our experience However, Schwentker and Livingston[21] recently described a group of 29 children with abdominal pain as a manifestation of epilepsy Fourteen of the patients had postictal sleep, 11 of these were markedly benefited by treatment with diphenylhydantoin None of the others were helped by anticonvulsant medication

SUMMARY

This report is a follow-up study of a group of children suffering from abdominal pain of cerebral origin and considered to be an epileptic phenomenon

A total of 31 patients were observed The clinical picture includes numerous autonomic features, especially vasomotor phenomena

1 Pathological electroencephalographic findings were obtained in 30 cases

2 Postictal sleep was seen in 16 cases

3 Nine patients had clearcut convulsive phenomena at one time or another

4 In nine other patients without convulsions the attacks subsided spontaneously at adolescence

5 The physiological and clinical background of cerebral control of gastrointestinal motility and sensibility is discussed

6 One patient had intestinal intussusception at the time of her attacks of pain This should be considered as one of the underlying mechanisms for abdominal pain in view of known cerebral mechanisms for the production of intussusception

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William Beaumont.—The fame of William Beaumont is well established in American scientific lore, the school boy whose participation in the science of physiology is, at best, in the hazy future has heard in some detail of this energetic doctor who carried out experiments on a man with a hole in his stomach in a backwoods settlement in upper Michigan more than a hundred years ago Beaumont s ancestors were stalwart New Englanders He grew up in a home where civic and religious obligations were taken seriously and in addition he had the advantages of excellent local schooling He settled in Champlain, New York, where for three years he taught the village school He entered into the social life of the town and, after deciding to become a doctor, read avidly in borrowed medical books In 1810 he began the serious study of medicine with Dr Benjamin Chandler in St Albans, Vermont His first hand experience in anatomy consisted of the dissection of every amputated arm or leg he could secure, he urged autopsies at the death of his patients and from these, too, he learned anatomy He secured his license to practice medicine in 1812 and very soon thereafter joined the U S Army at Plattsburgh Beaumont took part in the War of 1812, seeing service as a military surgeon from February, 1813, to August, 1814, largely in the region around the mouth of the Niagara River and in Plattsburgh Even before leaving Plattsburgh and throughout the campaign in 1813 he kept voluminous notes bearing on his medical experiences—the therapeutic and surgical treatment employed and, wherever possible, the result, obtained, all in the minutest detail —Arthur H Smith, William Beaumont (November 21, 1785—April 25, 1853), *Journal of Nutrition* May, 1951

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[14] Watts J W and Frazier C H. Cortical Autonomic Epilepsy J Nerv & Ment. Dis 81 168 1935

[15] Wechsler I S Abdominal Pain as Symptom of Disease of Brain J A M A 105 647 (Aug 31) 1935

[16] Penfield W and Erickson T C Epilepsy and Cerebral Localization Study of Mechanism Treatment and Prevention of Epileptic Seizures Spri[illegible] Ill Charles C Thomas Publisher 1941

[17] Robinson [illegible] J Radiologic Gastrointestinal Studies in Epilepsy Am J Psy[illegible] 1095 1939

[18] Moore [illegible] Symptomatic Abdominal Epilepsy Am J Surg. 72:883 194[illegible]

[19] Delay [illegible] psie abdominale Presse méd 57 1129 1949

[20] Lambert, J [illegible] iatric Observations on Children with Abdominal P[illegible] Am J P[illegible] 98 451 1941

[21] Livingston, S[illegible] Schwentker F F. Abdominal Pain as a Manifestation of Epilep[illegible] Children Personal communication to the authors

TERMINAL BRONCHIOLAR OR "ALVEOLAR CELL" CANCER OF THE LUNG

REPORT OF THIRTY-THREE CASES

William L Watson, M D
and
Robert R Smith, M D, New York

At Memorial Hospital we have noted in the past several years a definite and rapid increase in the incidence of cancer of the lung At the same time, a corresponding increase in the number of lesions that we classify as "terminal bronchiolar or alveolar cell cancer of the lung" has been reported by the department of pathology

Malassez,[1] in 1876 was the first to describe the multiple, nodular form of alveolar cell carcinoma At autopsy both of his patient's lungs were found to be studded with pea-sized nodules, but the bronchi themselves were free of tumor Microscopic study of the lesion revealed the alveoli to be lined with a cylindrical, cuboidal and flat epithelium The peribronchial lymph nodes contained metastatic tumors In 1903 Musser[2] described a diffuse form of this type of lung cancer This is a rarer type, which may involve a single lobe or an entire lung, and it may simulate lobar pneumonia in the stage of gray hepatization Musser also described satellite nodules in the opposite lung

CLINICAL ASPECTS

The clinical material for this report is a series of 33 histologically proved cases of terminal bronchiolar cancer of the lung found in a review of 1,585 malignant lung lesions at Memorial Hospital The first case of terminal bronchiolar cancer encountered in this series appeared in 1932 Twenty-one patients with this type of disease have been seen by us in the past five years, 18 in the past two years, and 13 in the past year This would seem to indicate that the disease is now more readily identified by the pathologist and that in many of the earlier cases lesions may have been incorrectly classified as mesothelioma, adenocarcinoma, anaplastic carcinoma or metastatic carcinoma The true incidence of this disease at our hospital, therefore, cannot be accurately determined There has been a rapid increase in cases of lung cancer at Memorial Hospital in recent years, and a proportionate increase in the number of carcinomas of the alveolar type is to be expected

The symptoms and clinical course of terminal bronchiolar carcinoma differ slightly, but definitely, from those recorded for the commonest types of bronchogenic cancer The disease varies in aggressivity death may occur within a few months after the onset of symptoms, or, as in the case of two of our patients, who are alive and well more than five years after operation, the disease may prove to be relatively localized and benign There was definite evidence of metastases in all the 19 patients who died Brain metastases were noted in two patients, and in five there was roentgenographic evidence of bone metastases In 70% of the cases of terminal bronchiolar carcinoma, the history on admission pointed to a primary lung disease Fourteen of the 33 patients complained of symptoms now recognized as suggestive or even pathognomonic of cancer of the lung The history of eight other patients simulated that of an inflammatory type of pulmonary disease, four patients complained of symptoms that indicated a generalized disease, such as Hodgkin's granuloma Five patients had no symptoms, the tumor of the lung being discovered in routine chest roentgenograms taken for tuberculosis survey studies or in routine preemployment films Carcinoma of the esophagus was suspected in one patient, and the remaining patient had symptoms of cardiac failure

In this series of 33 cases, the average age of the patients was 55 6 years and one fourth of them were women The occupations of the men varied from business administration (in 10 cases) to various types of manual labor, such as plumbing, mechanics and stationary engineering The women were all housewives No recognized carcinogenic factor was elicited in a study of the histories of these patients Five did not smoke, eight were moderate smokers and 10 were heavy smokers Family histories were available for 21 patients, and four of these reported cancer in other members of the family History of an attack of disabling influenza, 20 to 30 years before the current illness, was described by two patients Eleven gave histories of previous lung disorders One probably had had pulmonary tuberculosis 25 years before the present illness, and two reported having had pleurisy Five had been told they had pneumonia in the six-month period prior to hospitalization

Presenting Symptoms —Pain and cough were the commonest symptoms Bloody sputum was noted in nine cases, but only one frank hemoptysis was recorded The average duration of symptoms before admission was four months

Physical Findings —No objective evidence of tumor was found on physical examination of 13 of the 33 patients Physical signs indicated chest disease in 13 instances Five patients had palpable tumor metastases in the skin and supraclavicular lymph nodes, and one, although in the terminal stage of the disease, had no physical signs of cancer Pleural effusion was recorded as present in nine instances, and two patients had clinical signs of brain metastases

Roentgenologic Findings —In one instance the x-ray studies were considered to be negative, and yet in this case an exploratory thoracotomy revealed a nonresectable setting due to extensive invasion of vital structures by cancer The commonest roentgenographic finding was

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Fellow in Surgery (Dr Smith)

From the Thoracic Service Memorial Hospital

[1] Malassez, L Examen histologique d un cas [illegible] encephaloide du poumon (epithelioma) Arch. de physiol n [illegible] 353 372, 1876

[2] Musser J H Primary Cancer of the Lun[illegible] A Am Physicians 18:624-636 1903 also in Univ Pennsylvania [illegible] 296 1903 1904

a single, peripherally located, circular area of increased density, usually 2 to 4 cm in diameter This nodule, as in almost any primary lung cancer that occurs away from the hilus, seemed to differ from the usual metastatic nodule in that it appeared to be more irregular, slightly larger, less homogeneous, less sharply outlined and, in many instances, less dense Seven patients had multiple nodules, and the disease was bilateral in several instances Roentgenographically, the disease in these cases might be confused with pneumonoconiosis, miliary tuberculosis or metastatic cancer Evidence of fibrosis, however, was absent, and the nodules seemed to coalesce to form infiltrative masses It is interesting to note that terminal bronchiolar cancer of the lung does not produce a characteristically diagnostic roentgenogram A roentgenographic diagnosis of malignant lung tumor was made in only 65% of our cases

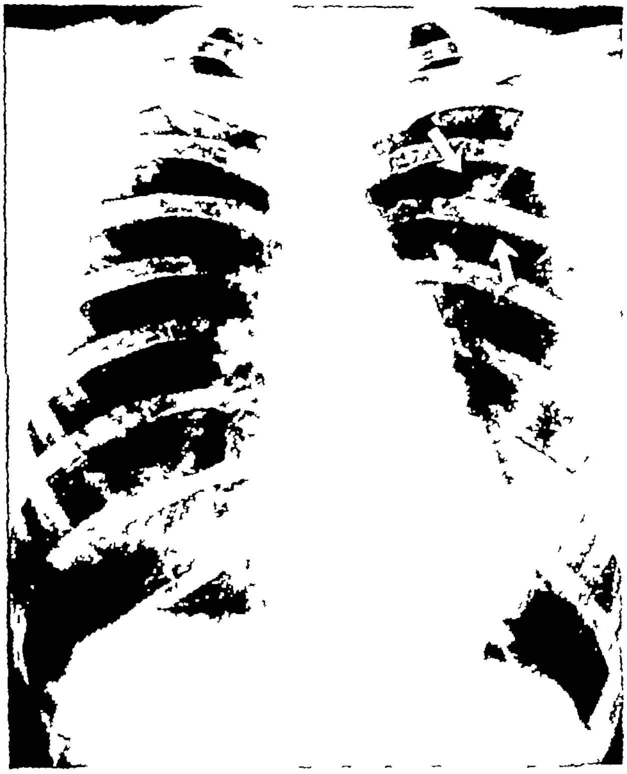

Fig 1 (case 21)—Roentgenogram showing circumscribed tumor in the left upper lobe

Laboratory Data—In no case was the sputum positive for acid-fast bacilli Cytological studies were made in 15 cases, six specimens were reported as Papanicolaou Class V (showing conclusive proof of cancer), three as Class IV (positive for cancer), and three others as Class III (strongly suggestive of cancer) In one case, in which pneumonectomy was done, the preoperative sputum [illegible]ted as Class V was the only positive evidence on [illegible] to operate was based After opera[illegible] was negative, but five months later it [illegible]rted as Class V, and roentgenograms then [illegible] presence of multiple metastases in the con[illegible]ng

Papanicolaou,[3] who made the cytological examinations of the sputum and bronchial washings, has noted that this tumor exfoliates profusely and yields abundant material characteristic of this type of neoplasm MacDonald[4] also believes the bronchial cell changes to be easily identifiable and characteristic of the disease

The peripheral blood picture in terminal bronchiolar cancer is not that seen in inflammatory disease of the lungs The leukocyte count varies between 7,000 and 10,000 The lowest was 3,400 and the highest 14,000 For patients with lung cancer the hemoglobin content was exceptionally high, averaging 13 to 15 gm, and the red cell count averaged 4,000,000

In 19 cases studied bronchoscopically, the tumor was visualized in three instances and positive histological evidence obtained Each of the patients was in an advanced, or terminal, stage of the disease, and the biopsies revealed cancer in the submucosal lymphatics Six patients in the terminal stage were too ill to tolerate bronchoscopy

BASES FOR DIAGNOSIS

The literature reveals that the diagnosis of terminal bronchiolar carcinoma is most frequently made at autopsy However, in our series of 33 cases, a clinical diagnosis of terminal bronchiolar carcinoma was made in 22 instances A combination of tests was used to establish that diagnosis cytological studies of sputum established the diagnosis in five instances, aspiration biopsies of lung masses, in five, and thoracotomy with biopsy, in eight cases A surgical biopsy of a peripheral lymph node established the diagnosis in four instances In five cases the clinical and laboratory data indicated

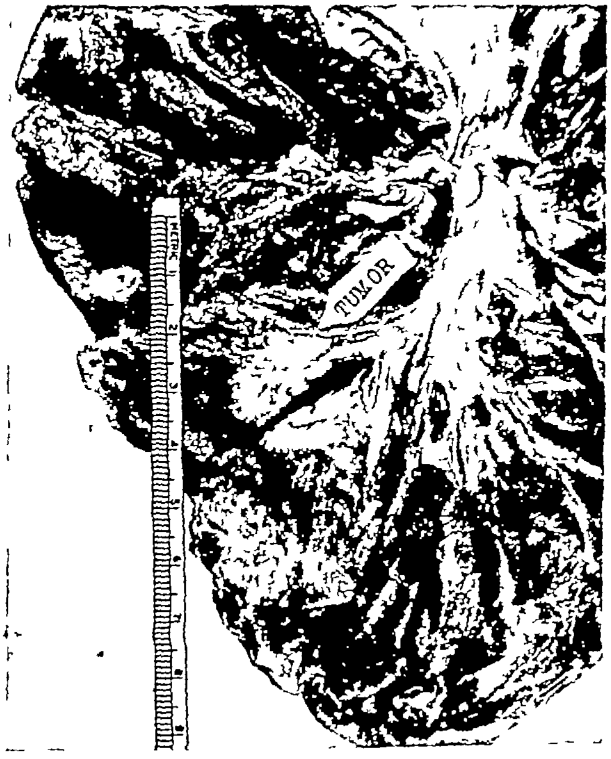

Fig 2 (case 21)—Operative specimen showing terminal bronchiolar carcinoma.

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[3] [illegible] laou [illegible] Personal communication to the authors

[4] [illegible] and Woolner L. B Cytologic Examination of

diagnosis was made only at the time of necropsy In the remaining six cases, the diagnosis of lung cancer was established only after post-mortem examination

TREATMENT

The accepted treatment of terminal bronchiolar carcinoma, as of cancer of the lung in general, is excisional surgery Radiation therapy may prove a valuable adjunct in palliative treatment in advanced cases Because of the advanced nature of the disease only symptomatic treatment could be administered to six of the 33 patients Two patients were misdiagnosed as having metastatic thyroid cancer and received roentgen therapy with some worthwhile palliative effect The remaining 25 patients received either surgical and/or radiation therapy

Radiation Therapy —Nine patients received primary radiation therapy Four had a hilar mass, three had diffuse nodular disease throughout the lungs and two had a solitary pulmonary mass with pleural effusion containing tumor cells Six patients died four to eight weeks after completion of therapy, and no appreciable palliative effect was noted in these instances

In a recent case, surgery was combined with irradiation in a program currently being studied at this institution The patient was found at the time of thoracotomy to have a locally resectable primary lung tumor but a nonresectable mediastinal mass A segmental resection of the primary tumor was done, and 56 6 mc of radon in the form of gold seeds was placed in the mediastinal masses under direct vision This insured direct radiation into the cancer and diminished the undesirable radiation effects on the normal lung tissue The gold seeds also acted as excellent markers to direct the beam of supplementary supervoltage roentgen therapy Brain metastasis has since developed in this patient, and roentgen therapy to the brain has given relief of symptoms The patient is still alive with evidence of metastases in the brain and cervical lymph nodes

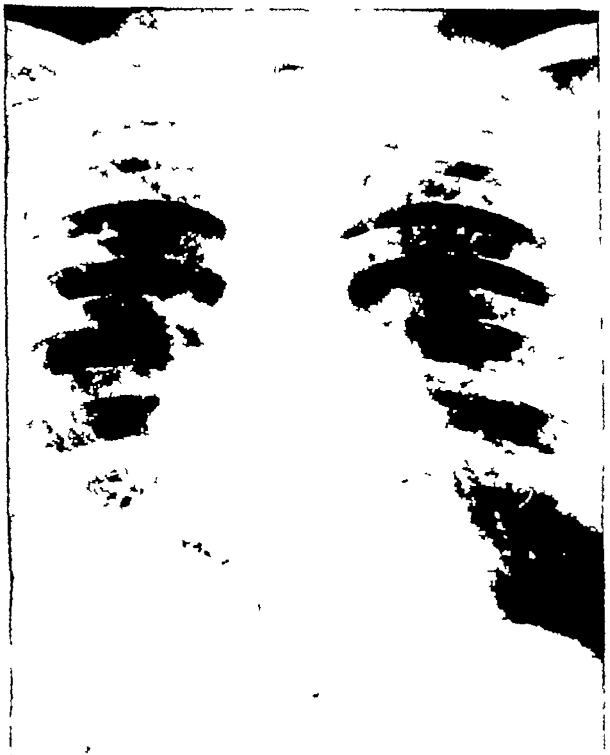

Fig 3 (case 18) —Immediately preoperative roentgenogram showing diffuse masses in the right lower lobe

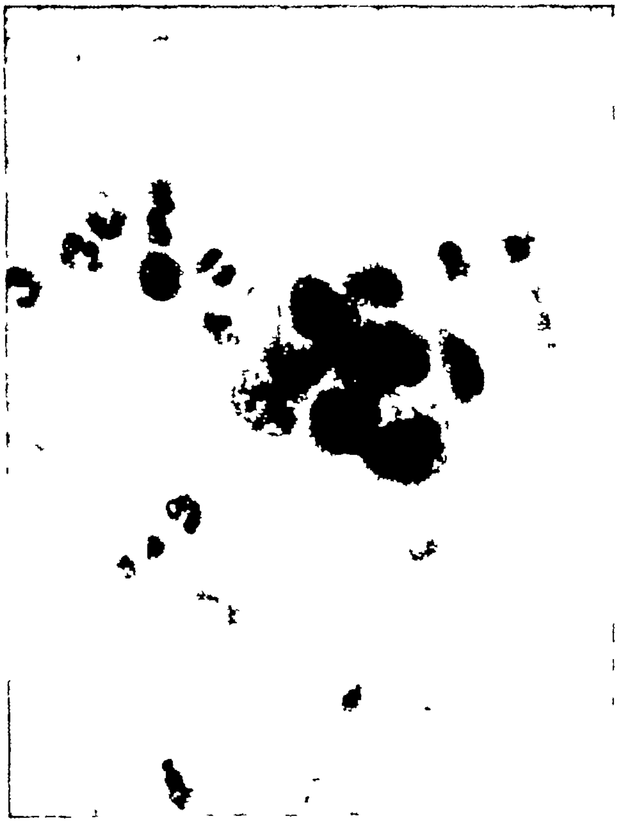

Fig. 4 —Photomicrograph of bronchial washing specimen showing characteristic neoplastic cells

We realize that nine cases constitute too small a series for determination of the efficacy of radiation treatment and also that most of the cancers so treated were inoperable by present criteria and thus clinically far advanced However, our observations indicate that radiation as a primary means of treatment has little value

Surgical Therapy —Sixteen patients received definitive surgical therapy Ten are living and two of these are alive and well more than five years after excision of their terminal bronchiolar cancer One was treated by lobectomy and the other by a simple excision of the tumor Nine of the 16 patients had a complete pneumonectomy, the first of which was done in 1942 Three of these patients died from widespread metastatic cancer 7, 9 and 19 months respectively, after their operations In four instances metastases were demonstrated in the mediastinal lymph nodes removed at the time of operation Extensive cancer metastases developed in [illegible] remaining lung of one patient Ptero[illegible] (teropterin®) and nitrogen mustard [illegible] fect in this case Five of the nine patients [illegible] monectomy was performed are living and fr[illegible]

In one case treatment consisted of a segm[illegible] tion of the primary tumor and interstitial rad[illegible] to the metastatic mediastinal nodes as previ[illegible] scribed In only two of the 1[illegible] was the tumor found to be nonresectable at the time of thoracotomy Both of these patients had direct extension of bulky tumor into the mediastinum

Sixteen cases may constitute too small a series for determination of the efficacy of a given form of treatment However, a resectability rate of 87% is more than double that encountered in the usual types of bronchogenic cancer and suggests that this form of cancer of the lung is more amenable to surgical excision It is also noted that the only patients in our series who survived five years after treatment were those treated surgically (Tables 1 and 2)

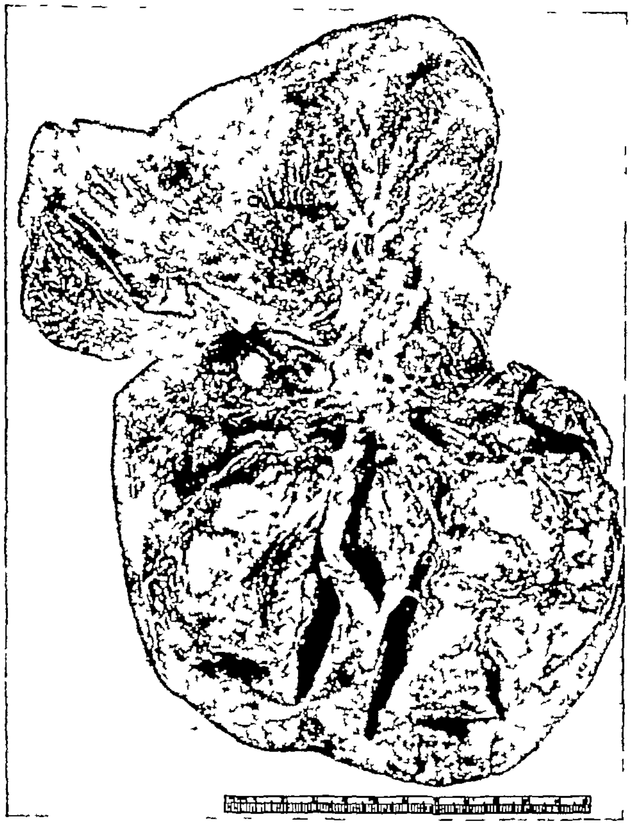

Fig 5—Specimen removed at operation showing extensive diffuse terminal bronchiolar carcinoma

TABLE 1—*Summary of Results of Treatment*

Treatment	Patients Alive More Than 5 Yr After Treatment	Patients Alive Less Than 5 Yr After Treatment	Patients Who Died*
Symptomatic	0	1	7
Radiation	0	2	7
Pneumonectomy	0	5	4
Simple excision	1	0	0
Segmental resection plus radiation	0	1	0
Lobectomy	1	2	0
Exploratory thoracotomy plus radiation	0	1	1
Total	2	12	19

* For the 19 patients who died there was an average interval of 7.6 mo between the onset of symptoms and death

PATHOLOGY

Terminal bronchiolar carcinoma occurs almost always in the peripheral portions of the lungs, in either a nodular or a diffuse form In 21 of the 33 cases, the lesion occurred in the upper lobes, 11 in the left lung and 10 in the right lung The nodular form was present in 23 instances The nodules varied in size from a few millimeters to 8 cm They were discrete and irregular in outline and occasionally had soft necrotic centers The nodules that occurred near the periphery frequently involved the pleura The diffuse form of the disease, involving part of a lobe, the whole lobe and sometimes an entire lung, was the predominant feature in 10 cases (30%) of this series In some instances the multiple nodules seemed to coalesce and form diffuse masses, which grossly gave the appearance of lobar pneumonia in the stage of gray hepatization In no instance were cavities seen either in the involved area or in the distant lung tissue Atelectasis was not observed grossly distal to the tumor, nor was suppuration a common finding In this respect, the gross anatomy of terminal bronchiolar carcinoma differs from the usual bronchogenic carcinoma Since the primary lesion in terminal bronchiolar carcinoma starts peripherally, atelectasis and suppuration of the distal part of the lung do not occur Local compression of lung parenchyma by the tumor may produce marginal areas of atelectasis, edema and congestion

Another gross anatomic characteristic of terminal bronchiolar carcinoma is the absence of involvement of the bronchi In the early lesions, it is impossible to demonstrate a tumor arising from bronchial epithelium In the more advanced cases, a bronchus may be invaded by surrounding carcinoma and ulceration may occur Pleural effusion occurred in nine instances, and in five the effusion was bilateral

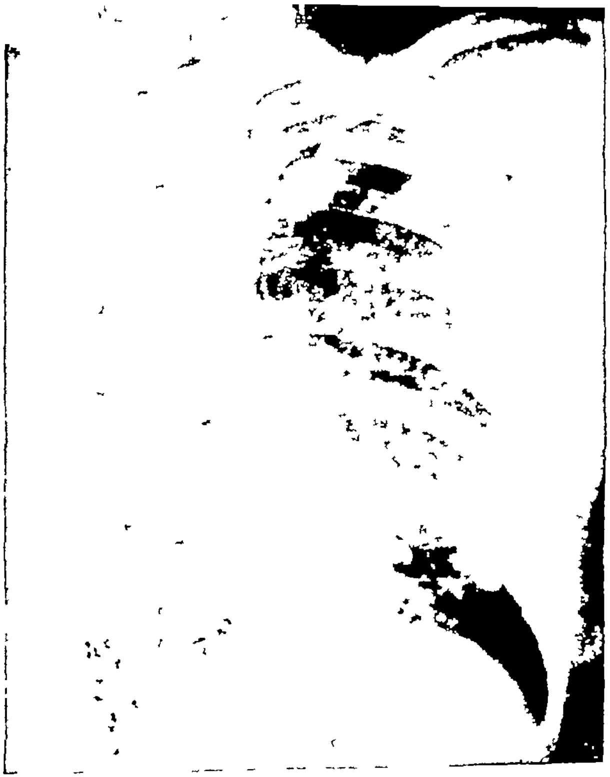

Fig. 6—Contralateral metastases six months after pneumonectomy

Metastases—Metastases were demonstrated in 25 of the 33 cases The commonest transference was to the

TABLE 2 —*Summary of Data 33 Cases of Terminal Bronchiolar Carcinoma*

Case	Year	Age of Patient	Sex of Patient	Presenting Symptoms	Duration Presenting Symptoms Mo	X Ray Findings (Chest)	Sputum*	Results of Bronchoscopy	Methods of Diagnosis	Location in Lungs	Metastases	Treatment	After Onset of Symptoms
1	1932	62	M	Cough chest pain	9	Multiple nodules	N	N	Autopsy	Multiple nodules left lower lobe	Yes	X Ray	Died 11 mo
2	1935	35	M	Chest pain	2	Mass filling chest	N	N	Autopsy	Scattered foci entire left lung	Yes	Symptomatic	Died 2 5 mo
3	1939	42	M	Dyspnea and dysphagia	4	Multiple nodules	N	N	Biopsy of skin nodule autopsy	Right lower lobe	Yes	Symptomatic	Died 5 mo
4	1940	55	M	Cough	6	Hilar mass peripheral nodule	N	Pos	Cervical lymph node biopsy	Left upper lobe	Yes	X Ray	Died 2 mo
5	1940	61	F	Cough	2	Solitary nodule pleural effusion	Tb N	Neg	Autopsy	Right middle lobe	Yes	X Ray	Died 6 mo
6	1940	55	M	Loin pain	2	Hilar mass	N	Neg	Autopsy	Left upper lobe	Yes	X Ray	Died 7 mo
7	1942	50	M	Chest pain	1.5	Hilar mass	Tb N	N	Thoracotomy aspiration biopsy	Left lower lobe	No	Pneumonectomy	Died 10 mo postoperatively
8	1943	59	M	Dyspnea	1	Pleural effusion	N	N	Autopsy	Entire left lung	Yes	Symptomatic	Died 3 mo
9	1943	48	M	Back pain	6	Hilar mass	N	N	Autopsy	Right hilar area	Yes	X Ray to bone metastases	Died 11 mo
10	1943	41	F	Pneumonia	6	Solitary mass	N	N	Thoracotomy	Right lower lobe	No	Lobectomy	Alive and well after 5 yr
11	1944	50	M	None		Infiltrative mass	N	N	Thoracotomy	Left upper lobe	No	V excision tumor	Alive and well after 5 yr
12	1944	61	M	Pneumonia	5	Multiple nodules	N	N	Autopsy	Right and left lungs	Yes	Symptomatic	Died 6 mo
13	1945	28	M	Shoulder pain	6	Mediastinal mass	N	N	Autopsy	Left upper lobe	Yes	X Ray to metastases	Died 10 mo
14	1947	57	F	Pain cervical spine	10	Pleural effusion	N	Neg	Autopsy	Left upper lobe	Yes	Symptomatic	Died 15 mo
15	1947	39	M	Chest pain	4	Mediastinal mass	P III	Neg	Thoracotomy autopsy	Right upper lobe	Yes	Thoracotomy inoperable	Died 6 mo
16	1947	62	M	Chest pain	1	Solitary mass	P V	Neg	Aspiration biopsy thoracotomy	Right upper lobe	No	Pneumonectomy	Alive and well 20 mo postoperatively
17	1947	58	F	Chest pain wheezing	1	Solitary mass	P V	Neg	Thoracotomy	Left upper lobe	Yes	Pneumonectomy	Died 9 mo postoperatively
18	1948	60	M	Virus pneumonia	3	Multiple nodules	P V	Neg	Thoracotomy sputum cytology	Right lower lobe	Yes	Pneumonectomy	Died 6 mo postoperatively
19	1948	59	M	Dyspnea	12	Patchy density	P V	N	Autopsy	Left lower lobe	Yes	Symptomatic	Died 12 mo
20	1949	60	M	None		Solitary mass	N	Neg	Thoracotomy aspiration biopsy	Right lower lobe	Yes	Segmental resection plus radiation	Alive 8 mo postoperatively with disease
21	1949	43	F	None		Solitary mass	N	Neg	Thoracotomy	Left upper lobe	Yes	Pneumonectomy	Alive 8 mo postoperatively without disease
22	1949	57	M	Chest pain	3	Pleural effusion	P I Tb N	Pos	Bronchoscopy thoracotomy	Entire left lung	Yes	Pneumonectomy	Died 4 days postoperatively
23	1949	51	M	Chest pain	5	Pleural effusion	N	Neg	Pleural biopsy	Entire left lung	Yes	X Ray	Alive 7 mo
24	1949	51	M	Cough	6	Hilar mass patchy density	P V	Neg	Sputum cytology pneumonectomy	Right hilar area	Yes	Pneumonectomy	Alive 5 mo postoperatively
25	1949	60	M	Cough	9	Hilar mass atelectasis	P II	N	Biopsy supraclavicular node	Right upper lobe	Yes	X Ray	Alive 3 mo after treatment
26	1949	50	M	Dyspnea	5	Solitary mass	P III	Neg	Thoracotomy	Left upper lobe	No	Lobectomy	Alive 2 mo postoperatively
27	1949	62	F	Dyspnea	?	Solitary mass	P III	N	Thoracotomy aspiration biopsy	Right upper lobe	No	Pneumonectomy	Alive 6 mo postoperatively
28	1949	[illegible]	M	Chest pain	1	Infiltrative mass	P I	N	Supraclavicular lymph node biopsy	Left lung	Yes	X Ray	Died 5 mo after treatment
29	[illegible]	55	F	None		Solitary mass	P IV	Neg	Sputum cytology pneumonectomy	Right upper lobe	No	Pneumonectomy	Alive 3 mo postoperatively
30	1949	44	M	Cough	12	Hilar mass	P IV	Neg	Sputum cytology thoracotomy	Right hilar area	Yes	Thoracotomy X Ray	Alive 3 mo
31	[illegible]	71	M	Chest pain	3	Multiple nodules	P IV	Pos	Bronchoscopic lymph node biopsies	Diffuse both lungs	Yes	Symptomatic	Died 4 mo
32	[illegible]	56	M	Cough chest pain	1	Multiple nodules bilateral	P IV	Neg	Aspiration biopsy of lung mass	Diffuse both lungs	Yes	X Ray	Alive after 3 mo
33	1949	40	F	None		Solitary mass	P III	Neg	Thoracotomy	Right upper lobe	No	Lobectomy	Alive 3 mo without disease

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* P I to V Papanicolaou classification of smears Tb N negative for tuberculosis N not examined

same lung, to the opposite lung or to peribronchial or hilar nodes In five of the nine patients who were subjected to pneumonectomy, lymph nodes removed with the lung contained metastatic carcinoma Among 10 patients in whom a solitary lung nodule was the only clinical evidence of cancer, metastases were found in regional nodes in four instances

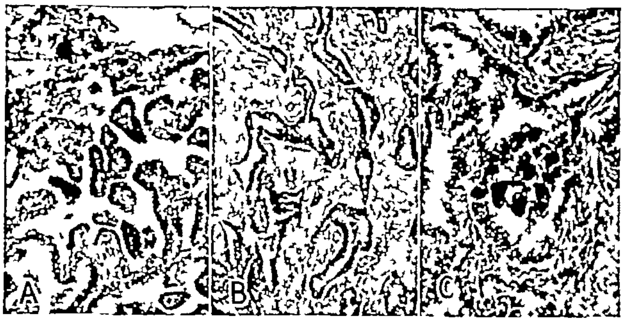

Fig 7 —*A* photomicrograph of tissue removed from patient (case 21) showing papillary formation in terminal bronchiolar carcinoma *B* an adjacent area from the specimen showing fibrosis *C* photomicrograph of an area of terminal bronchiolar carcinoma (case 21) showing desquamated débris in the lumen

Microscopic Appearance —The microscopic anatomy of terminal bronchiolar carcinoma shows the distinguishing characteristics of the disease, which are unlike those seen in the commoner type of bronchogenic carcinoma The alveolar spaces are lined by cuboidal or columnar nonciliated epithelium in several layers or in papillary formation The alveoli may be distended and completely filled with proliferating epithelium Single cells or clusters containing large multinucleated giant cells may be found lying free in the alveolar spaces These are the same type of cells that Papanicolaou describes as characteristic of *terminal bronchiolar carcinoma as evidenced in cytological* studies of the sputum The individual cells have varying degrees of pleomorphism The nuclei are hypochromatic, rounded, vesicular or irregular in outline Mitosis is not common Among our cases the cytoplasm was acidophilic and relatively abundant Signet-ring cells, so characteristic of adenocarcinomas of gastrointestinal origin, were found in one-half the cases The vacuoles of the signet-ring cells contained mucin and were indistinguishable microscopically from those seen elsewhere in carcinomas arising in mucus-producing glands

COMMENT

The microscopic appearance of terminal bronchiolar carcinoma, together with the failure to demonstrate origin from the primary or secondary bronchi, supports the view that this type of cancer arises from the lining cells of the terminal bronchioles or alveoli The nature of the lining epithelium of the alveoli is still a controversial subject, as evidenced by the discussions in recent papers[5] Current opinion appears to favor Miller's[5] thesis of a continuous lining epithelium of the alveoli Observations on the type of changes seen in the alveolar lining in bronchiectasis and other chronic pulmonary infections support this view Herbut,[6] Ikeda,[7] and Bonne[8] believe that terminal bronchiolar carcinoma originates in the basal cells of the bronchioles, which proliferate and extend peripherally along the septa Others[9] contend that the alveolar lining cells are mesenchymal in origin, however, sufficiently definite evidence in favor of this hypothesis appears to be lacking From a practical standpoint, this problem is chiefly of academic interest, for these neoplasms are clinically and anatomically similar to other carcinomas of epithelial origin

Anatomically, there is a close resemblance between terminal bronchiolar carcinoma and pulmonary adenomatosis The latter is characterized by a tall columnar epithelium, paucity of mitotic figures, and absence of stromal invasion. Ewing[10] discusses pulmonary adenomatosis as an entity However, a search of the files in the laboratories of Memorial Hospital fails to yield a single case of true, obviously "benign," pulmonary adenomatosis

In laboratory animals, the carcinogenic effect of urethan, dibenzanthracene, and other carcinogens is well known These carcinogens, whether given intraperitoneally, intratracheally or subcutaneously, caused the development of multiple lung tumors in 100% of susceptible mice within four months[11] Many authors report the same histological picture in both the spontaneous and the induced tumors They describe the tumor as an adenomatous tumor of alveolar cell origin, invading the lung and metastasizing to the surrounding lymph nodes These tumors have histological characteristics similar to those of the neoplasm described in this article

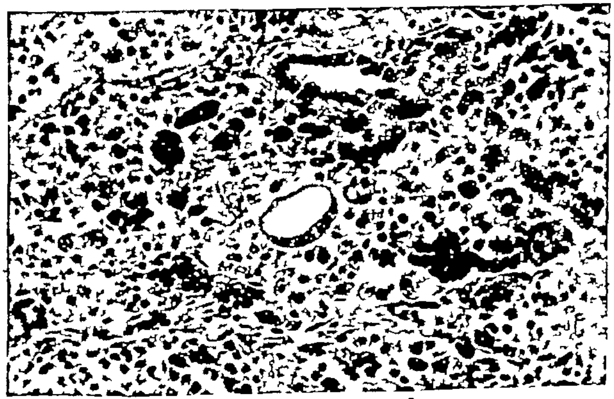

Fig 8 (case 18)—Photomicrograph of tissue removed from the right lung of patient, showing characteristic signet ring cells

An infectious disease of similar histological appearance, occurring in sheep and in other animals, is known as jaagsiekte (driving sickness) but is also known by various other names, such as epizootic adenomatosis, and infectious adenomatosis It has been reported as closely resembling terminal bronchiolar carcinoma This disease is believed to be caused by a virus that can readily be transmitted to healthy sheep when they are housed with diseased animals Dungal[12] and his associates report one instance of successful transmission of the disease by an intrapulmonary injection of a tissue suspension Efforts to isolate a virus or other specific agents have been unsuccessful The histological characteristics of jaagsiekte consist of epithelial proliferations forming papillary intra-alveolar masses, which are noninvasive, singularly preserving the alveolar septa Aynaud[13] has reported an instance of metastases in lymph nodes and subcutaneous tissues in jaagsiekte De Kock[14] has suggested that jaagsiekte may actually be a true neoplastic disease However, more proof is required before this hypothesis can be accepted

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[5] Miller W S The Lung Springfield Ill. Charles C Thomas Publisher 1937 p 56

[6] Herbut, P A Alveolar Cell Tumor of the Lung Further Evidence of Its Bronchiolar Origin Arch Path **41** 175 184 (Feb) 1946

[7] Ikeda K. Alveolar Cell Carcinoma of the Lung Am J Clin Path **15**: 50-63 1945

[8] Bonne C. *Morphological Resemblance of Pulmonary Adenomatosis* (Jaagsiekte) in Sheep and Certain Cases of Cancer of the Lung in Man Am J Cancer **35**: 491 501 1939

[9] Frissell L F and Knox L. C. Primary Carcinoma of the Lung Am J Cancer **30** 219 288 1937

[10] Ewing J Neoplastic Diseases A Treatise on Tumors ed. 4 Philadelphia, W B Saunders Company 1940 p 879

[11] (*a*) Hen[illegible] and Meyer H L. Further Studies on Urethane Induced Pulm[illegible] mors J Nat. Cancer Inst. **5** 415-417 1945 (*b*) Orr J W The [illegible] on of Pulmonary Adenomata in Mice by Urethane Brit. J Can[illegible] 6 1947 (*c*) Shimkin M B Induced Pulmonary Tumors in Mice II Reaction of Lungs of Strain A Mice to Carcinogenic Hydrocarbons Arch Path **29**: 239 255 (Feb) 1940 (*d*) Induced Pulmonary Tumors in Mice I Susceptibility of 7 Strains of Mice to the Action of Intravenously Injected Methylcholanthrene ibid. **29** 229-238 (Feb) 1940 (*e*) [illegible] J L Multiple Bilateral Pulmonary Adenomatosis in Man. [illegible] Med. **71** 403-409 (March) 1943

SUMMARY

A clinical and histological study of 33 patients with terminal bronchiolar carcinoma of the lung is presented In the majority of these cases the disease ran a rapid clinical course Chest pain and cough were the commonest presenting symptoms In 15% the disease was asymptomatic and was discovered by routine roentgenographic studies of the chest A positive cytological diagnosis of cancer was made in nine instances The distinguishing feature of terminal bronchiolar carcinoma of the lung is seen in its gross and microscopic appearance Grossly, it has been divided into two forms—nodular (70% of this series) and diffuse (30% of this series) Cytologically, the two forms are identical The only effective treatment is surgical excision Two of the patients in whom surgical intervention was attempted prior to 1945 are alive and well, one had a lobectomy and one a simple excision of the mass Both were in the early stage, in which a limited procedure was sufficient to eradicate the disease Nine patients with more extensive disease required pneumonectomy Four are dead, and five are living, six months to two years after operation Another means of treatment that requires more study and trial is a combination of surgery and irradiation, in this procedure the primary bulk of diseased tissue is excised, and interstitial radon in the form of gold seeds is placed in the remaining inoperable cancer External irradiation can then be more accurately directed to the well marked residual cancer The relation between this disease entity and so-called pulmonary adenomatosis, and jaagsiekte disease, is discussed

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[12] Dungal N Gislason G and Taylor E L Epizootic Adenomatosis in the Lungs of Sheep Comparisons with Jaagsiekte Verminous Pneumonia and Progressive Pneumonia J Comp Path. & Therap **51**: 46-68 1938

[13] Aynaud M Peyron and Falchetti Sur le cancer du mouton chez le mouton et ses liens étiologiques avec les lésions parasitaires et infectieuses, Compt rend Acad Sc **195** 342 344 1932.

[14] de Kock, G Are the Lesions of Jaagsiekte in Sheep of the Nature of Neoplasm? Annual Report Director Veterinarian Service (Sect 5-9) **2**: 611-641 1929

INTESTINAL VOLVULUS PRECIPITATED BY LEAD POISONING

REPORT OF FIVE CASES

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and

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Our purpose is to present observations supporting our belief that intestinal volvulus may be precipitated by plumbism, a sequence of events unmentioned in the literature as far as we can determine

It is well known that in some world areas, such as the Baltic region, volvulus may be a major cause of intestinal obstruction, reaching incidences as high as 50% of all obstructions[1] Among the natives of the highlands of Peru as seen at this hospital,[2] volvuli also cause about 50% of all obstructions seen The majority of these are of the sigmoid colon

We have observed repeatedly at autopsies and at abdominal operations that the natives of this area generally possess a long, redundant, mobile megasigmoid, usually with a narrow pedicle-like mesosigmoid predisposed to twist Of the factors mentioned in the literature as being of import in the development of such anatomically long sigmoids, the two factors that stand out most here are distinctly increased dietary roughage and congenital development A third factor, the elevated altitude, conceivably may play a role. It has been observed by us and others that persons living at this (12,200 ft) and higher altitudes often experience "bloating," flatulence, anorexia, abdominal discomfort, and, often, episodes of diarrhea without ascribable cause, all probably representing manifestations of disturbed gastrointestinal function related to environmental hypoxia, because these symptoms disappear on return to sea level[3]

Of the five cases to be reported, four volvuli involved the sigmoid and one, the small bowel All the patients had worked in the lead plant eight months to seven years, and at the time of hospitalization they showed pronounced evidence of lead absorption, as well as prior symptoms consistent with gastrointestinal plumbism merging into those of volvulus

It seems generally agreed that during an episode of lead poisoning of the gastrointestinal type, there is an

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[1] (*a*) Haymond H E Massive Resection of the Small Intestine An Analysis of 257 Collected Cases Surg Gynec & Obst. **61**: 693 705 (Nov) 1935 (*b*) Perlmann cited by Probstein J C and Senturia H R. Volvulus of the Sigmoid Colon Surg Gynec [illegible] **77**: 669-677 (Dec) 1943 (*c*) Campbell D A and Smith R G The Diagnosis and Treatment of Volvulus of the Sigmoid Colon S Clin N [illegible] America 20 603 611 (April) 1950

[2] Chulec General Hospital is the central [illegible] and treatment center located at La Oroya Peru at an altitude of 12,200 feet The cases in this report were in lead workers from the smelter located at the same altitude

[3] Crane H L *Soroche* An Fac. de med Lima 306-309 (June) 1928 Monge M C. Andean Sickness Symptomatology Evolution and Treatment ibid 128-150 (June) 192[illegible]

intestinal turmoil consisting of uncoordinated muscular spasms of the intestinal tract, giving rise to the colic[4] Lead poisoning can closely mimic intestinal obstruction with colicky pain, nausea, vomiting, obstipation, and even abdominal tenderness Distention however is not described as a prominent feature in pure lead poisoning, few instances of it being cited in the literature[5] However, we have observed distention in several instances of uncomplicated lead colic with various grades of colonic and small bowel distention discernible both on physical and radiographic examination Intravenous administration of calcium is of great help in the differential diagnosis by relief of the pain of pure plumbism, the symptoms of a superimposed organic obstruction persisting[6]

It is our belief that, as observed in this population group (persons with these anatomically long sigmoids described above), the effects of plumbism may precipitate a volvulus In one case following (case 5), the small bowel was involved, and there was no anatomical lesion at operation to account for volvulus

These cases are emergencies If brief conservative measures do not release the volvulus, one must immediately perform an operation

REPORT OF CASES

CASE 1 —G Y G, a Peruvian native, 54, who had worked in the lead smelter for seven years, was admitted with generalized crampy abdominal pain of six hours duration without nausea and vomiting, but preceded by constipation for several days He had experienced one previous attack of gastrointestinal plumbism, which had responded to the usual treatment (intravenous administration of calcium) Examination disclosed pallor and a definite lead line of the gums The abdomen was somewhat distended, quiet, and not tender A plain radiograph disclosed rather pronounced distention of the colon The hemoglobin was 16 Gm per 100 cc the erythrocytes numbered 4,260,000 per cu mm[7] There were numerous stipple cells in the blood smear

He was treated with meperidine (demerol®) hydrochloride, calcium intravenously, and enemas with neostigmine (prostigmin®) bromide, with partial relief of pain, and passed noticeable amounts of gas Despite this during the ensuing six hours, his distention increased and his general condition deteriorated Reevaluation pointed to probable sigmoid volvulus Major surgical intervention was judged out of the question because of his poor condition, and cecostomy alone was done with the hope that transient benefits from proximal decompression along with interim supportive measures would permit more radical surgical treatment However, such benefits never accrued, and the patient died two days later with evidence of peritonitis and uremia Autopsy confirmed volvulus and gangrene of the sigmoid with rupture of the involved loop and peritonitis

On the basis of this unfortunate experience, our first encounter with combined plumbism and volvulus, we decided to increase our index of suspicion for associated volvulus in natives with evidence of lead absorption and adopt a more radical approach, because the treatment of lead poisoning and volvulus is antithetical While pure plumbism is treated with anodynes, calcium, enemas, and bowel stimulants, sigmoid volvulus that does not readily reduce with brief conservative means is a surgical emergency[8]

Campbell and Smith[1c] have since warned against the inadequacy of cecostomy alone in sigmoid volvulus, as used in this case and illustrated as well in other literature, with this view, we heartily agree

CASE 2 —P S R, 26, a Peruvian native who had worked seven years in the lead furnaces was admitted with a history of colicky abdominal pain for 11 days For three days there had been nausea and anorexia but no vomiting He had noted progressive muscular weakness and cramps in the extremities, but his bowels had moved daily *Blood loss from the usual avenues was denied Examination disclosed pallor* of the skin and mucous membranes He was suffering from spasmodic abdominal pain There was a definite lead line along the incisors The abdomen was soft, flat, and without muscle spasm or localizing signs of any kind There was weakness of extension at both wrists and the strength of grip as tested with the dynamometer was distinctly reduced The porphyrin test showed dark red fluorescence[9] The hemoglobin was 13 6 Gm. per 100 cc, leukocytes 6,600 with 66% polymorphonuclear leukocytes Numerous erythrocytes showed basophilic stippling The urine showed 2 + albumin The icterus index was 15 The *blood Kahn test was normal The diagnosis was plumbism* of the gastrointestinal type, and the patient was accordingly treated with calcium intravenously, vitamins meperidine hydrochloride, atropine, and enemas There appeared to be improvement, during the next two days, but during the following three days he increasingly complained of colicky epigastric pain Reexamination disclosed a soft abdomen with slight tympany and tenderness in the epigastrium There was no rebound tenderness or muscle spasm, tachycardia, or fever A plain radiograph of the abdomen showed a distended colonic loop with fluid levels, and a barium enema indicated changes consistent with sigmoid volvulus (fig 1)

Exploratory laparotomy was carried out immediately, the diagnosis being sigmoid volvulus When the peritoneum was opened, odorless straw-colored fluid escaped, and hugely distended colonic loops were present The colon was decompressed using Carrington Williams maneuver, this being productive of large quantities of brown fluid and gas[10] The sigmoid was twisted 360 degrees in a clockwise direction as viewed from the position of one facing the abdomen It was a paddle shaped loop 3 ft. (91 44 cm) in length This loop was resected, and immediate end to-end anastomosis carried out with the use of a closed technique with the Furniss clamp *Proximal decompression* was carried out through a tube cecostomy The postoperative course was uneventful except for a small wound abscess, which was promptly drained and healed When the bowels were moving normally, the cecostomy tube was removed on the 14th postoperative day, the fistula promptly closing (fig 2) Antilead treatment was continued postoperatively Basophile aggregation count was not performed until three weeks after admission, at which time it was 1 8% The result of the porphyrin test at this time was faintly rose

This case shows the development of volvulus while therapy was being given for plumbism, the abdominal symptoms increasing under calcium treatment A proximal vent, established at the time of an anastomosis done on the unprepared colon, permits immediate, continued decompression, early cleansing of the colon by irrigation, and the introduction of succinylsulfathiazole or other agents as accessory safeguards against breakdown and infection at the anastomotic site In cases of plumbism in which the lead may continue to act on the bowel postoperatively with increased ileus and dyskinesia because of its action on the musculature, cecostomy is an additional protective measure providing decompression The fistula closes promptly if the anastomosis is not stenotic

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[4] McNally W D Toxicology Chicago Industrial Medicine 1937 Osler W The Principles and Practice of Medicine ed. 7 New York, D Appleton and Company 1909 Meakins J C The Practice of Medicine St. Louis C V Mosby Company 1936 Goodman L. and Gilman A The Pharmacological Basis of Therapeutics New York The Macmillan Company 1941 Cushny A R. Edmunds C W and Gunn J A Pharmacology and Therapeutics ed 12 Philadelphia Lea & Febiger 1940 Christian H A. The Principles and Practice of Medicine ed 15 New York D Appleton-Century Company 1944

[5] Pickett, Nachman and Levitt cited by McNally W D Toxicology Chicago Industrial Medicine 1937

[6] Belknap E. L. Differential Diagnosis of Lead Poisoning J A M A 139: 818-823 (March 26) 1949

[7] *It must be remembered that at this altitude* where polycythemia is the rule these and subsequent figures for blood values represent a severer grade of anemia than they would indicate at sea level

[8] Brusgaard, C Volvulus of the Sigmoid Colon and Its Treatment Surgery 2: 466-469 (Sept.) 1947 Internat. Abstr Surg 86 259 260 (March) 1948

[9] Harrold G G Urinary Porphyrins in Lead Poisoning in Proceedings of the Lead Hygiene Conference New York Lead Industries Association 1948 pp 129-133 Waldman R. K and Seidman R. M Reliability of the Urinary Porphyrin Test for Lead Absorption Arch Indust. Hyg 1 290-295 (March) 1950 Maloof C C. Role of Porphyrins in Occupational Diseases ibid 1 296-307 (March) 1950

[10] Williams C and Williams C., Jr Surgical Aspiration of the Bowel in Advanced Obstruction, Ann Surg. 131: 846-852 (June) 1950

Case 3—M A de la C, 27, a Peruvian native laborer at the lead furnaces for 13 months, was admitted with diffuse abdominal colicky pain for a period of eight days, worse for the preceding three days This was accompanied by vomiting, progressive constipation, and no bowel movements for two days The symptoms had failed to abate with two days' treatment with calcium intravenously in the outpatient clinic The patient was afebrile There was a definite lead line along the pyorrheic lower central incisors Wrist extension and dynamometer grip were weak The abdomen was somewhat distended without spasm or rigidity, and generally tender to pressure but without rebound tenderness He complained of cramps in the extremities Laboratory studies revealed pronounced basophilic stippling, a mild leucocytosis, urinary albumin of 1 +, and a normal blood Kahn test The result of the urinary porphyrin test was deep rose A plain radiograph of the abdomen suggested sigmoid volvulus, and this was confirmed by barium study (fig 3)

Immediate exploratory laparotomy revealed beefy colored fluid and a huge, obstructed, redundant sigmoid twisted 360 degrees in a clockwise direction about a narrowed mesosigmoidal pedicle Carrington Williams' decompression and immediate resection by open end to-end anastomosis were carried out, with removal of the 2½ ft (76 20 cm) sigmoid A proximal vent was established by tube cecostomy The postoperative course was uneventful, the cecostomy tube being removed on the 12th postoperative day, at which time the bowel movements were normal Barium enema 26 days later showed a normal sigmoidal course (fig. 4) Basophile aggregation count could not be done until the 19th postoperative day, at which time it was 1 2%, and the result of the porphyrin test was faintly rose Antilead treatment was continued postoperatively, as well as penicillin and streptomycin therapy

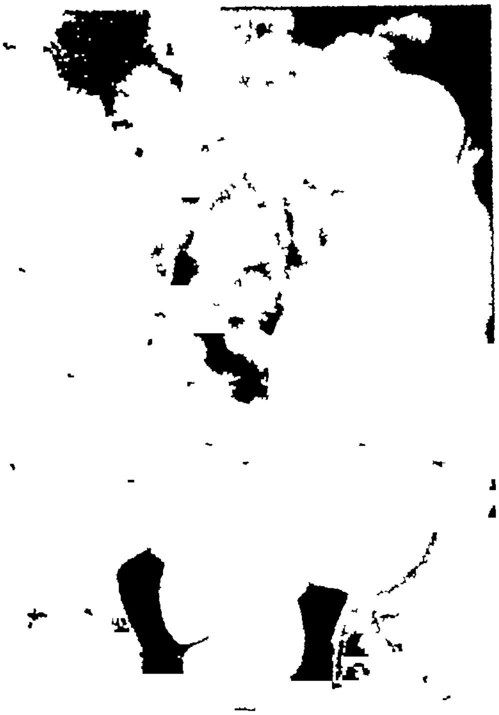

Fig 1 (Case 2)—Note the huge sigmoid As determined at operation the barium column stopped abruptly in the lower segment of the twisted sigmoid at the distal point of obstruction The proximal colon is distinctly distended

This case, similar to the one preceding, was handled radically with good success, and we have done immediate resections on volvuli of the sigmoid not involving lead poisoning with equally good results It is well known that simple detorsion, which may have to be done at times, is not the best mode of surgical treatment of sigmoid volvulus because of the high incidence of recurrence[11] Baronofsky has reported successful cases of immediate resection on the obstructed colon[12] Pierini advocates one stage end-to-end procedures as the treatment of choice in sigmoid volvulus[13]

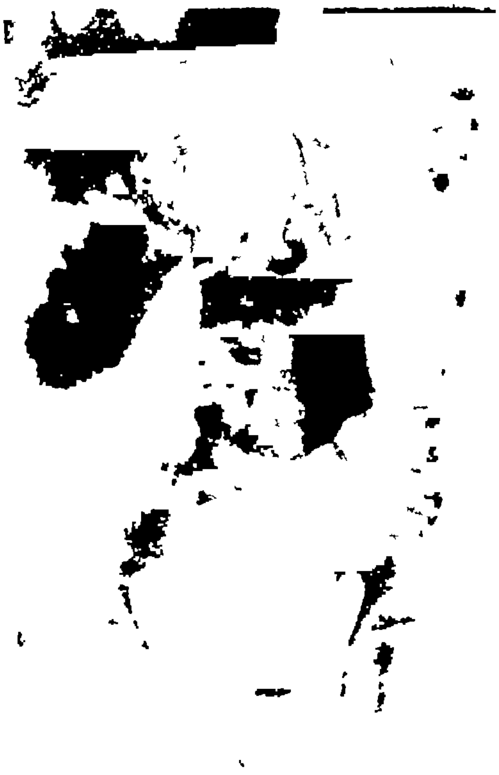

Fig 2 (Case 2)—Barium enema 25 days postoperatively showing a normal sigmoidal course with minimal redundancy and no constriction at the site of anastomosis

Case 4—A Peruvian native lead smelter worker, 42, was admitted with a history of pain in the abdomen, arms, and legs of 15 days duration For six days prior to admission, there was a history of nausea without vomiting and obstipation Purgatives had caused aggravation of abdominal pain without laxative effect, and 24 hours before admission, an enema was given with return of only ½ L. The patient had worked for eight months in the lead smelter, and there were no difficulties antedating the present episode Physical examination showed a man in acute distress who was obviously anemic He had a well-defined lead line of the gums as viewed with a magnifier and good light The extensors of the forearms were weak most distinctly on the right, there was weak grip as measured by the dynamometer The abdomen was moderately distended and tympanitic with moderate epigastric and infraumbilical tenderness elicited on palpation No masses or spasm were present The bowel tones were numerous, but there were no rushes and the rectal examination was normal Laboratory data revealed hemoglobin of 14 Gm and leucocytes 6 000 with a normal differential. The blood smear showed punctate basophilic stippling The urine showed 2 + albumin and the result of the urine test for coproporphyrins was positive Abdominal plain roentgenogram showed a distinctly distended

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11 Griffin W D Bartron, G R and Meyer K A Volvulu of the Sigmoid Colon Report of 25 Cases Surg Gynec & Obst 81 287 294 (Sept.) 1945

12 Baronofsky I D Primary Resection and Aseptic End to-End Anastomosis for Acute or Subacute Large Bowel Obstructions Surgery 27: 664-672 (May) 1950

13 Pierini A Volvulus of the Sigmoid Loop Dia med 21 526 (1949) Internat Abstr Surg 89 559 (Dec) 1949

proximal large bowel, which was gas filled, and the barium enema showed a redundant sigmoid colon, the column stopping abruptly in the left colon

The complaints decreased after the barium enema and it was felt that this procedure had untwisted an incompletely twisted sigmoid (less than 360 degrees) He responded to intravenous administration of calcium, vitamins, and repeated enemas For the first two or three days, enemas were productive of little gas and feces, but because improvement was gradual, if not dramatic, and the clinical condition of the patient was good, immediate surgical intervention was not deemed necessary On the third hospital day the results of enemas were excellent, and thereafter the bowels functioned normally with and without the aid of purgatives Elective resection has not yet been recommended this patient being under continued observation and ambulatory antilead treatment.

CASE 5—P E C, a Peruvian native laborer, 20, in the lead plant for two years was admitted with a chief complaint of crampy abdominal pain and obstipation for five days He had recently noted anorexia and weakness, but there had been no nausea or vomiting, or peripheral cramps There had been no previous episodes Examination disclosed a fairly well-developed and fairly well nourished man with pallor of the mucous membranes and a lead line of the gums There was no fever, the pulse rate was 100 The abdomen was moderately distended and tympanitic with some prominence and tenderness in the epigastric region There was no muscle spasm or rebound The grip was weak as measured with the dynamometer, but extension was not discernibly weakened Laboratory findings included a positive result in the urinary porphyrin test, and the blood smear showed basophilic stippling Hemoglobin was 13 6 Gm A plain radiograph of the abdomen showed pronounced gaseous distention of the colon, as well as multiple loops of distended small bowel with fluid levels in some, these being in the upper abdomen A barium enema ruled out sigmoid volvulus, but because of the high location of the cecal shadow, an ileocecal volvulus was suspected In view of these observations and the failure of the symptoms to abate with intravenous administration of calcium, it was felt that surgical exploration was indicated

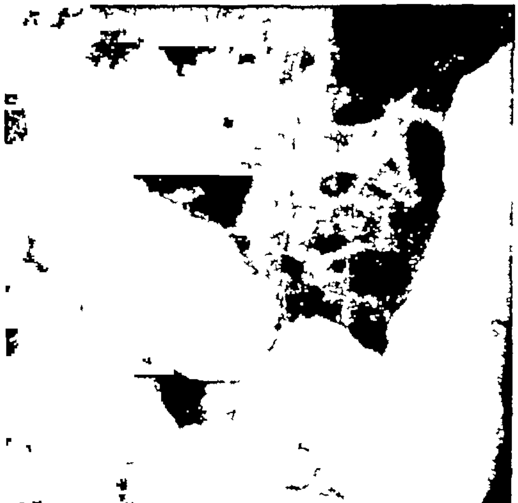

Fig 3 (Case 3)—Barium enema showing greatly elongated sigmoid the barium column stopping in the region normally occupied by the splenic flexure but in actuality this represents only the distal half of the obstructed sigmoid Note the hugely distended proximal colon

Laparotomy revealed an excess of clear peritoneal fluid The small bowel mesentery was twisted clockwise 360 degrees the distal half of the small bowel being collapsed while the proximal half was dilated, edematous, and distended with liquid content. Except for scattered petechial hemorrhages, there was no significant impairment of the circulation either of small bowel or its mesentery There were no congenital abnormalities located, the cecum was anchored higher than usual, and the large redundant sigmoid was not twisted Simple detorsion was carried out, and calcium therapy was continued postoperatively Recovery was uneventful

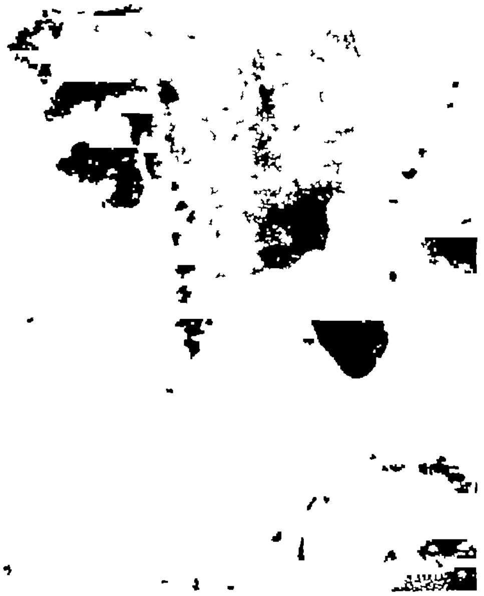

Fig. 4 (Case 3)—Barium enema 26 days later showing a normal sigmoidal course without undue redundancy and with slight but asymptomatic narrowing at the site of primary anastomosis

In this instance it would appear that because of the action of lead on the bowel volvulus may sometimes occur in the absence of contributory anatomical abnormalities

SUMMARY AND CONCLUSIONS

Five cases of volvuli associated with lead poisoning, four involving the sigmoid and one the small bowel, are presented There was one fatality through our failure to recognize early that both volvulus and lead poisoning were present, the other four patients recovered Two cases required prompt surgical intervention for complete sigmoid obstruction, and immediate resection was successful The small bowel case required only detorsion One other case underwent spontaneous detorsion during a diagnostic barium enema The role of plumbism in the precipitation of volvulus is discussed In all the cases presented, symptoms consistent with those of gastrointestinal plumbism preceded by a matter of days the more acute symptoms heralding the onset of volvulus To us, this temporal relation between these two diseases is so clear that we feel it is justifiable to relate them causally and to conclude that intestinal volvulus may be precipitated by lead poisoning, especially in those instances in which a megasigmoid or other predisposing factor exists

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PHENACEMIDE IN TREATMENT OF EPILEPSY

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The purpose of this paper is to classify and tabulate the extensive clinical reports on the use of phenacemide (phenurone®) in the treatment of epileptic seizures, in order to attain a clearer picture of the uses and limitations of the drug which might otherwise not be available and to acquaint physicians with an anticonvulsant drug which, when used alone or in combination with other anticonvulsants, is capable of relieving certain patients of seizures which are not affected by other antiepileptic drugs known at present Since this drug is not without toxic potentialities, physicians who use it should be thoroughly acquainted with the undesirable side effects which may occur and the precautions to be observed as well as with its efficacy

This paper is not intended to discourage or interfere with subsequent publications by individual investigators On the contrary, it is hoped that those who have had experience in the use of phenacemide, particularly those using it in a relatively large series of cases, will publish their results

Phenacemide, known chemically as phenacetylcarbamide, was synthesized by Spielman,[1] and its anticonvulsant properties investigated by Richards and Everett[2] It is a drug of low toxicity when given orally to animals It possesses slight sedative action and remarkable anticonvulsant activity Doses of 400 mg per kilogram produce slight ataxia in mice and cats In all animals heart rate and respiration were not impaired Rats kept on diets containing 0 25, 0 5, and 1 0% phenacemide for 24 mo showed no significant changes in growth rate, blood status, or urine Dogs on daily doses of 100, 200, 400 and 600 mg per kilogram from six to 18 mo had normal values for blood and kidney function Liver-function tests remained normal Repeated bone-marrow smears showed normal marrow elements Cats do not tolerate phenacemide as well as do dogs and rodents Phenacemide is highly effective against supramaximal electroshock seizures and pentylenetetrazol convulsions in mice and rabbits at doses of 300 mg per kilogram orally, the effect lasting for three to four hours In a new test,[3] which produces focal seizures of a psychomotor type in animals, phenacemide was more effective than other commonly used anticonvulsants Studies in mice have shown a synergistic anticonvulsant action between phenacemide and mesantoin® (3-methyl-5 5-phenylethylhydantoin), phenacemide and phenobarbital, and phenacemide and trimethadione (tridione®)

THERAPEUTIC RESULTS

In the majority of cases, phenacemide has been used in the treatment of epilepsy when other anticonvulsants have been tried and have failed to control completely or to reduce the frequency of the seizures This method of evaluation constitutes a severe test In a total of 1,539 patients, approximately 65% have shown improvement when phenacemide was given alone or in combination with other anticonvulsants, such as phenobarbital, diphenylhydantoin (dilantin®), and mesantoin® In 539, or 35% of the total, the seizures have been completely controlled or reduced in frequency 75% or more Thirty-five per cent of the phenacemide treatments were classed as failures, either because phenacemide therapy did not bring about improvement in the patient's condition or because it became necessary to discontinue the drug when side effects occurred

When types of seizures (Table 1) were considered individually, whether they occurred alone or in combination with other types, it was found that their frequency of occurrence was reduced in 68% of the patients Sixty-three per cent of the patients with petit mal, 70% of the patients with grand mal and 68% of the patients with psychomotor seizures were benefited

TABLE 1 —*Results of Phenacemide Therapy in Relation to Types of Seizures*

Type Seizure	Total No of Seizures	Greatly* Improved Patients No	Greatly* Improved Patients %	Improved† Patients No	Improved† Patients %	Total Improved Patients No	Total Improved Patients %	Unaffected Patients No	Unaffected Patients %
Psychomotor	448	103	36	144	32	307	68	141	32
Petit mal	[illegible]	151	33	138	30	289	63	[illegible]	37
Grand mal	[illegible]	258	39	203	31	461	70	198	30
Mixed‡	593	193	[illegible]	157	32	350	59	243	41
Total	1,502	572	37	485	31	1,057	68	[illegible]	32

* 75% reduction in frequency of seizures to complete control
† 30% to 75% reduction in frequency of seizures
‡ Not included in total.

Fifty-nine per cent of the patients with mixed types of seizures experienced definite reduction in the number of seizures

Five hundred and eighty of the total number of patients suffered from only one type of epileptic seizure (Table 2) One hundred and eighty-six had petit mal, and of these 54, or approximately 29%, showed a 75% reduction in the number of seizures or complete control One hundred and eight, or 58%, were improved There were 273 patients with grand mal of whom only 33% showed improvement Seventy per cent of the patients with psychomotor epilepsy were improved Approximately the same percentage were found to be benefited whether the psychomotor epilepsy occurred alone or in combination with other types of seizures From an analysis of these figures, which also include data from

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Drs R K Richards and G M Everett of the Department of Pharmacology Abbott Laboratories cooperated in the preparation of this paper

From the Department of Clinical Investigation Abbott Laboratories (Dr Tyler) and the Medical Division Food and Drug Administration Federal Security Agency (Dr King)

1 Spielman M A Geiszler A O and Close W J Anticonvulsant Drugs II Some Acetylureas J Am Chem Soc 70 4149 (Dec) 1948

2 Everett G M Pharmacological Studies of Phenacetylurea (Phenurone) An Anticonvulsant Drug Federation Proc 8 Part I 289 1939 Richards, R K and Everett G M Laboratory Records Department of Pharmacology Abbott Laboratories, unpublished data.

3 Everett G M and Toman, J E P Experimental Psychomotor [illegible] Drugs Federation Proc, 10 293 (March) 1951

published reports,[4] it would seem that phenacemide is most effective in controlling psychomotor seizures Disturbing personality changes are most likely to occur in patients with this type of seizure It is suggested that phenacemide be used cautiously in the treatment of patients with psychomotor epilepsy who have previously exhibited marked personality problems The incidence of control of the grand mal seizures was greatest when grand mal occurred in combination with either petit mal or psychomotor epilepsy The drug was less effective in the treatment of grand mal alone

TABLE 2 —*Patients in Whom Only One Type of Seizure Occurred*

Type Seizure	Total No of Patients	Greatly* Improved Patients No	Greatly* Improved Patients %	Improved† Patients No	Improved† Patients %	Total Improved Patients No	Total Improved Patients %	Unimproved Patients No	Unimproved Patients %
Psychomotor	121	62	51	24	19	86	70	35	30
Petit mal	186	54	29	54	29	108	58	78	42
Grand mal	273	62	23	28	10	90	33	183	67
Total patients	580	178	31	106	18	284	49	296	51

* 75% reduction in frequency of seizures to complete control
† 85% to 75% reduction in frequency of seizures

TABLE 3 —*Results of Treatment with Phenacemide Alone and in Combination with Other Anticonvulsant Drugs*

Treatment	Total Seizures	Grand Mal: Total Patients	Grand Mal: Patients Greatly Improved (%)*	Grand Mal: Patients Improved † (%)	Grand Mal: Total Patients Improved (%)	Grand Mal: Patients Unaffected (%)	Petit Mal: Total Patients	Petit Mal: Patients Greatly Improved (%)*	Petit Mal: Patients Improved † (%)	Petit Mal: Total Patients Improved (%)	Petit Mal: Patients Unaffected (%)	Psychomotor: Total Patients	Psychomotor: Patients Greatly Improved (%)	Psychomotor: Patients Improved † (%)	Psychomotor: Total Patients Improved (%)	Psychomotor: Patients Unaffected (%)	Mixed‡: Total Patients	Mixed‡: Patients Greatly Improved (%)*	Mixed‡: Patients Improved † (%)	Mixed‡: Total Patients Improved (%)	Mixed‡: Patients Unaffected (%)
Phenacemide only	384	179	48	28	76	24	107	45	26	71	29	98	59	21	80	20	75	55	29	84	16
Diphenylhydantoin and phenacemide	91	42	59	26	85	15	26	62	19	81	19	23	52	44	96	4	25	60	28	88	12
Phenobarbital and phenacemide	103	54	47	24	71	29	32	25	41	66	34	17	59	18	77	23	29	28	48	76	24
Phenobarbital diphenylhydantoin and phenacemide	57	26	43	42	85	15	19	32	37	69	31	12	50	50	100	0	14	36	50	86	14
Diphenylhydantoin mesantoin® and phenacemide	24	14	58	21	79	21	8	66	34	100	0	7	29	29	58	42	4	50	50	100	0
Mesantoin® and phenacemide	25	12	50	25	75	25	3	66	0	66	34	10	60	30	90	10	4	50	50	100	0
Mesantoin® phenobarbital and phenacemide	19	7	29	14	43	57	8	63	13	76	24	4	50	0	50	50	6	68	16	84	16

* 75% reduction in frequency of seizures to complete control
† 85% to 75% reduction in frequency of seizures
‡ Not included in total

The results reported by the investigators who have used phenacemide in the treatment of epileptic seizures have agreed quite well, with the exception of one group[5] The patients treated by this group of investigators were those whose seizures were uncontrolled by established anticonvulsant therapy Use of phenacemide in their experience, brought about a reduction in frequency of seizures in 20 out of 63 patients, or 32%

Studies with animals have shown that phenacemide acts synergistically with other anticonvulsants An attempt was made to determine whether this is also true with humans Reports on 596 patients enabled us to determine how many of these were treated with phenacemide alone and how many with a combination of anticonvulsants Of the 596, 290 received only phenacemide Because of the presence of combined seizures in some of these, a total of 384 seizures or seizure combinations were treated Table 3 shows that phenacemide alone is effective in controlling or reducing seizures and is also effective when used in combination with other anticonvulsants

Phenacemide controls or markedly reduces the frequency of seizures to about an equal extent in adults and children[4b] One report[6] on 35 children showed that eight (23%) were entirely free of attacks for three to 17 mo Fifteen (43%) were improved, and 12 were not benefited Four of these patients had a morbilliform rash after use of the drug Two of these were able to take the drug without recurrence of the rash after it had been discontinued for a short interval The incidence of more serious side effects would seem to be lower in children than adults This is particularly true of the occurrence of severe emotional or psychological reactions[7a] In many cases where children were considered behavior problems before institution of phenacemide therapy, their behavior improved, and many were reported able to get along better in school and receive better grades

TYPE AND INCIDENCE OF SIDE EFFECTS

The side effects most frequently seen were either favorable or unfavorable personality changes The commonest manifestations of untoward reactions are decreased interest in surroundings, depression, suicidal tendencies, or, rarely, aggressiveness On the other hand, in some cases of pre-existing personality disorders improvement has been noted Personality changes have occurred in approximately 17% of all cases and have usually appeared within the first four to six weeks of phenacemide therapy The other more serious side effects which have been encountered are evidence of liver damage and changes produced on the hemopoietic system In addition, in the order of decreasing frequency (as shown in Table 4), gastrointestinal symptoms, rash, drowsiness, headache, and insomnia have been produced

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[4] (*a*) Gibbs F A. Exerett G M and Richards R. K. Phenurone in Epilepsy, Dis. Nerv System **10** 47 (Feb) 1949 (*b*) Zeifert M Phenurone in Epilepsy, Dis Nerv System **10**:245 (Aug) 1949 (*c*) Livingston S, and Kajdi L. Use of Phenurone in the Treatment of Epilepsy J Pediat **36** 159 (Feb) 1950 (*d*) Little S C and McBryde R. R Use of Phenylacetylurea (Phenurone) in Convulsive Disorders Am. J M Sc. **219**·494 (May) 1950

[5] Carter S, Sciarra D and Merritt H H Phenylacetylurea in the Treatment of Convulsive Seizures Dis Nerv System **11**:139 (May) 1950 Carter S and Merritt H H *Medical Therapy of Epilepsy* Journal Lancet **70** 103 (March) 1950

[6] Keith H M Use of Phenurone for Convulsive Disorders of Children *Preliminary Report Proc* Staff Meet Mayo Clin **25**:594 (Oct.) 1950

[7] (*a*) Davidson D T Jr and Lennox W G Phenacetylurea–Phenurone–in Epilepsy Dis Nerv System **11** 167 (June) 1950 (*b*) Levy R. W Simons D J and Aronson S M Fatal Hepatorenal Syndrome Associated with Phenurone Therapy New England J Med **242**:933 (June 15) 1950

PERSONALITY DISTURBANCES

Information is available as to the presence or absence of personality disorders in 350 patients previous to phenacemide therapy (Table 5) There was some evidence of psychiatric disturbances in 83, or 24%, of these patients Thirty-two, or 39%, of the 83 patients showed definite improvement after the administration of phenacemide, as contrasted with 23, or 27% whose behavior was aggravated by use of the drug In 28 patients, previously existing personality difficulties were not affected With 73% of these patients, therefore, phenacemide therapy could be continued In 19, or 5%, of the 350 patients who had not previously exhibited personality difficulties psychic changes developed after phenacemide therapy was started Depression developed most frequently. Other psychological manifestations reported were violence, paranoia, irritability, and suicidal tendencies

TABLE 4—*Frequency of Side Effects in 1,539 Cases*

		No of Cases	%
Psychic changes		263	17
Hepatitis		31	2
Deaths	4		
Gastrointestinal symptoms		130	8
Anorexia	78		
Nausea and vomiting	36		
Abdominal distress	15		
Diarrhea	1		
Rash		79	5
Exfoliative dermatitis	1		
Drowsiness		58	4
Blood changes		36	2
Leukopenia	22		
Leukocytosis	6		
Low platelet count	4		
Aplastic anemia with death	2		
Granulocytopenia	2		
Headache		24	2
Abnormal urinary findings		21	1
Transient albuminuria	8		
Acetone	10		
Sugar	2		
Nephritis	1		
Insomnia		15	1
Fatigue		14	
Fever		14	
Dizziness		11	
Paresthesia		5	
Muscle pain		5	
Weight loss		5	
Palpitation		3	
Pruritus		1	

Since administration of phenacemide has brought about an improvement in behavior in some patients, the existence of personality disorder need not be considered a contraindication to the use of the drug, but in patients with previous psychotic background there is a greater tendency for personality disturbances to develop However, the patient should be very carefully observed, preferably hospitalized temporarily If the disorder becomes exaggerated or new personality changes occur, use of the drug should be promptly stopped Withdrawal and loss of general interest may indicate the onset of serious personality disturbance

TOXIC EFFECTS ON LIVER

As shown in Table 4, there were 31 cases in which signs of liver damage were clinically observed In 27 of these jaundice cleared when the medication was discontinued In the other four patients hepatitis was the immediate cause of death The role of phenacemide in producing liver damage is difficult to evaluate in two of the cases [7] These deaths occurred during the early stage of the clinical investigation, before the possible hepatotoxic effects of phenacemide were realized At the time of writing, there have been no reports of deaths during a period of 14 mo This, in all probability, is due to closer supervision of the patient by the physician and to the observance of recommended precautions

It is difficult to evaluate the reports of abnormal deviation of liver function, as shown by tests such as cephalin flocculation and thymol turbidity and flocculation In some cases these tests have become positive, but continuation of the drug has not produced further indication of liver damage Urine urobilinogen excretion was not significantly increased, and no retention of sulfobromophthalein (bromsulfalein®) occurred These observations do not minimize the danger of possible liver damage but show that laboratory findings must be correlated with sound clinical judgment in the use of the drug, which has been implicated in the production of pathological changes in the liver Urine urobilinogen determinations should be made on all patients before phenacemide therapy is started and at frequent intervals thereafter If the test becomes positive to a degree considered significant (1 to 20 or over), other liver-function tests should be made, preferably the sulfobromophthalein retention

TABLE 5—*Special Study of Personality Changes*

		No	%
Total no of patients		350	
Patients with previous psychological disturbances		83	24
Effect of phenacemide	Personality improved	32	39
	Personality worse	23	27
	No change	28	31

BLOOD CHANGES

Blood changes have been reported in 36 patients Leukopenia (leukocyte count of 4,000 or less per cubic millimeter of blood) was the commonest condition observed, and it developed in 22 patients while phenacemide was being given The leukocyte count returned to normal in 20 patients upon withdrawal of the drug In the other two patients death, due to aplastic anemia,[8] occurred The role of phenacemide in producing aplastic anemia is uncertain In one patient [9] other anticonvulsant medications were used concurrently [8a] In the second patient [8b] other antiepileptic medications had been given with phenacemide for a time, but they had been discontinued some weeks before the onset of toxic symptoms

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[8] (*a*) Forster F M and Frankel K. Fatal Aplastic Anemia During Anti-Convulsant Therapy Report of a Case During Phenurone Therapy and Following Mesantoin Therapy Dis Nerv System 10 108 (April) 1949 (*b*) Simpson, T W Wilson E. B Jr and Zimmerman S L Fatal Aplastic Anemia Occurring During Anticonvulsant Therapy Probable Idiosyncrasy to Phenurone Ann Int. Med 32 1224 (June) 1950

[9] Forster F M, and Borkowski W J Paradione in Treatment of Petit Mal Epilepsy Am Pract. & Digest. Treat. 1 406 (April) 1950 Forster F M Therapy in Psychomotor Epilepsy J A M A 145 211 (Jan 27) 1951

OTHER SIDE EFFECTS

Gastrointestinal symptoms were reported in 130, or 8%, of 1,539 patients (Table 4) Anorexia, nausea, and vomiting occurred most frequently In some patients these symptoms were severe enough to require discontinuing the drug Administration of vitamin B complex has controlled these symptoms in some patients Rash was observed in 79, or 5%, of the patients In most patients this indicated a real sensitivity to the drug In a few patients a second trial with phenacemide did not produce a recurrence of the rash Abnormal urinary findings were reported in 21 patients In recent months there have been no reports of damaging effects on kidney function Drowsiness has been noted in 4% of the patients, headache in 2% Insomnia, fatigue, and dizziness have been seen less frequently Insensitivity to pain was reported in one patient [10]

DOSAGE

The dose of phenacemide must be individualized, based on the response of the patient It has been observed by some investigators that side effects are less likely to develop if the dosage is gradually built up to that which will control the seizures It is recommended that if some degree of control of seizures has been obtained with other medication such medication be continued and phenacemide added at a dosage of 0 5 gm three times a day The dosage of phenacemide should be increased above this starting dosage until seizures are controlled or limiting side effects develop If it seems that the control of seizures can be maintained with use of phenacemide alone, other medication can be reduced, but if a combination of phenacemide with other drugs produces better control of seizures, or allows control to be maintained with a lower dosage of phenacemide or with less disturbing side effects, the combination should be continued as maintenance medication It is recommended that an initial course of 0 5 gm three times a day at meals be prescribed to adult patients After one week an additional 0 5 gm may be taken when the patient rises, and in the third week the dose may be increased by 0 5 gm at bedtime An average dose of 2 to 3 gm per day has been adequate for most adults If seizures continue in spite of medication and the drug is well tolerated, the dosage may be increased at a more rapid rate than that suggested above Doses up to 5 gm per day have been given However, some patients obtain relief with small doses, for instance, one 0 25 gm tablet three times a day, but will not tolerate large amounts For children of 5 to 10 yr approximately one-half the adult dose is recommended Since the duration of action of the drug appears to be three to five hours, the above distribution of dosage would be optimal The maintenance dose should be the smallest amount which will adequately control seizures

Precautions —For the safety of the patient the following precautions must be observed

1 Except in carefully selected patients, phenacemide should not be administered until other accepted anticonvulsants have been tried and found ineffective in controlling epileptic seizures

2 A careful history should be taken to determine the presence or absence of pre-existing personality disorders Since phenacemide has brought about an improvement in behavior in many patients, the existence of personality disorder need not be considered a contraindication to the use of the drug However, the patient should be very carefully observed Should the disorder become exaggerated or undesirable personality changes occur, the drug should be promptly withdrawn

3 A careful history regarding previous allergic reactions to drugs should be taken

4 Careful clinical observation of the patient, particularly during the early months of treatment, is very important Gastrointestinal upset, general malaise, and fever may be indicative of early liver damage or blood dyscrasia psychological signs such as withdrawal and loss of general interest may indicate the onset of serious personality disturbance It is recommended that the interval between examinations be not more than two weeks for the first four months and monthly thereafter

5 The patient or his family should be advised that the use of phenacemide entails a certain risk which must be weighed against the possible benefits to be derived The patient and his family must be instructed to watch for the occurrence of a dark urine or yellow sclera, the occurrence of a rash, or evidence of gastrointestinal upset, such as anorexia, nausea, and vomiting In addition, the family must be instructed to look carefully for changes in the behavior of the patient If any of these changes occur, they must be reported promptly to the physician In some patients the gastrointestinal symptoms have yielded to treatment with vitamin B complex, which has permitted the continued use of phenacemide

6 Complete blood counts should be made before institution of phenacemide therapy and at monthly intervals thereafter If no abnormality occurs within 12 mo , the interval between counts may then be extended Emphasis should be placed upon erythrocyte and leucocyte counts and the total number of polymorphonuclear cells per cubic millimeter of blood, as these are a better index of possible blood dyscrasia than the percentage of cells

7 The patient should be carefully observed for evidence of liver damage The urine urobilinogen test is the simplest test and can be performed in the physician's office If this becomes positive (1 to 20 or more), other liver-function tests should be done The sulfobromophthalein retention test is suggested The drug should be used with caution to patients with histories of previous liver dysfunction.

8 Only enough phenacemide to last for a designated interval should be prescribed

CONCLUSIONS

The statement regarding the use of anticonvulsant drugs which appeared in a fairly recent article [11] seems *entirely logical*

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[10] Forster F M and Frankel K. Insensitivity to Pain as a Complication of Phenurone Therapy in Epilepsy Dis Nerv System 11 24 (Jan.) 1950

[11] Abbott J A and Schwab R S Serious Side Effects of Newer *Antiepileptic Drugs Their Control* and Prevention New England J Med. 242 943 (June 15) 1950

An efficient drug whose side effects can be largely prevented by care should not be condemned because of a small number of serious side effects attributed to its use in the literature Instead an understanding and perhaps overcautious, protective regimen should be set up and meticulously followed If this is done, side reactions tend to become fewer and fewer, and patients are not deprived of therapy they need

Phenacemide (phenurone®) has proved to be effective in controlling or definitely reducing the frequency of seizures in a fairly large percentage of patients who have not responded to other anticonvulsant drugs However, four deaths due to hepatitis and two due to aplastic anemia were reported prior to the initiation of controls for observing the patients Personality changes may also develop The drug should not be used unless other established anticonvulsants have failed to be effective The patient or his family should be fully aware of the nature of the drug and of the side effects which may be produced They should realize there is a certain risk which must be weighed against the possible benefits derived from its use The physician should instruct the patient to watch for signs of toxicity and report them promptly The patient should be seen by the physician at frequent intervals To this end, only enough phenacemide to last for a short, designated interval should be prescribed

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HEMOPTYSIS IN MITRAL STENOSIS

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Although the fact that mitral stenosis may cause hemoptysis long has been recognized, little emphasis apparently has been placed on its occurrence or prognostic significance Indeed, there is a paucity of literature on this subject. Stewart,[1] in 1934, reported three cases with autopsy findings He enumerated five situations in which blood appears in the sputum of patients suffering from mitral stenosis, namely, (1) pulmonary edema, (2) pulmonary infarction, (3) during the course of primary pneumonia, (4) paroxysmal pulmonary hemorrhage as described by Oppenheimer and Schwartz,[2] and (5) as a sign of "acute cardiac failure" More recently, Wolff and Levine [3] reported 50 cases of mitral stenosis with no selection of cases as to etiology of the hemoptysis

In reviewing hospital records of these cases, it became apparent that there is considerable lack of understanding of this problem, especially in the absence of congestive failure In the investigation of the symptom, bronchoscopy was carried out in two cases, in one of which the patient was put at bed rest for eight months in spite of a normal chest x-ray Disturbed by the recent publicity regarding the early symptoms of cancer, these patients now, more than ever, demand an explanation of the cause of the hemoptysis, and the physician should be aware of the frequency of its occurrence in mitral stenosis For these reasons a discussion of this subject seems justified

MECHANISM

In addition to the pulmonary or lesser circulation, the lungs have a bronchial blood supply at systemic pressure which nourishes the stroma. These bronchial arteries follow each bronchus and its subdivisions, but ultimately this blood joins the pulmonary arterial blood through bronchopulmonary anastomoses Distinct bronchial veins are found only at the hilus of the lung, the greater part of the blood of both bronchial and pulmonary arteries being returned by way of the pulmonary vein If inflammation, thrombosis, or embolism involving smaller branches of the pulmonary artery occurs, alterations take place in this dual circulation, the bronchial arteries rapidly increase in size,[4] and a collateral circulation is established Ferguson, Kobilak, and Deitrick,[5] in 11 autopsied cases with mitral stenosis, were able by injection methods to demonstrate dilated venous channels, in four of which cases there were innumerable wide submucosal channels running parallel to the lumina of the secondary and tertiary bronchi They are apparently beyond the visualization of the bronchoscope In four of the 11 cases there was a history of hemoptysis, and dilated venous channels were demonstrated in three of them, the fourth had acute hemorrhagic bronchitis, making it impossible to see these vessels It was the opinion of these observers that the increased pressure in the pulmonary vein in the presence of mitral stenosis surpassed the pressure in the right auricle, causing a reverse flow of blood through the anastomoses with dilatation to handle the collateral flow

Bland and Sweet,[6] who have successfully increased the collateral flow in these cases by a venous shunt between the azygos and pulmonary veins, found pressure readings from 425 to 535 mm of water in the left auricle at the time of surgery (normal being about 100 mm) Ferguson [5] and his group compared bleeding from these bronchial varicosities to that of hemorrhoidal or esophageal varices which, like bronchial veins, are submucosal

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[1] Stewart H J The Occurrence of Hemoptysis as a Symptom of Acute Heart Failure in the Presence of Mitral Stenosis M Clin North America 18:917, 1934

[2] Oppenheimer, B S, and Schwartz S P Paroxysmal Pulmonary Hemorrhages Am Heart J 9 697 1934

[3] Wolff, L and Levine H B Hemoptysis in Rheumatic Heart Disease Am Heart J 21 163 1941

[4] Rubin E H Diseases of the Chest Philadelphia W B Saunders Company 1948 chap 33

[5] Ferguson F C Kobilak R E and Deitrick J E Varices of the Bronchial Veins as a Source of Hemoptysis in Mitral Stenosis, Am Heart J 28:445 1944

[6] Bland E F, and Sweet R H A Venous Shunt for Advanced Mitral Stenosis J A M A 140 1259 (Aug 20) 1949

shunts between large venous areas A severe coughing spell, mild ulcerative bronchitis, or any rise in the left auricular pressure could initiate such attacks of hemoptysis Wolff and Levine[3] suggested that sclerosis of pulmonary vessels was a necessary precursor of hemorrhage, however, two of Ferguson's four patients with hemoptysis showed no evidence of pulmonary sclerosis Diapedesis of blood has been suggested as a mechanism but seems incredible as an explanation of large quantities of frank blood such as is seen in many cases of mitral stenosis

MATERIAL

Records of 85 cases of mitral stenosis admitted to the Charleston General Hospital were reviewed, of which 15, or 17 7%, had a history of hemoptysis In addition, 83 cases of mitral stenosis seen in the private practice of one of us (W C S) were reviewed, of which number, 14 carried a history of hemoptysis making a combined total of 17 3% All cases in which hemoptysis could be attributed to pneumonia or pulmonary infarction or to any other incidental cause were eliminated, as we were interested only in those cases in which the hemoptysis was consequential to a stenosed mitral valve We found that the cases fell into three distinct groups which will be presented and discussed separately These groups are (1) those with none to slight cardiac enlargement with no congestive failure, (2) those with moderate to great cardiac enlargement without signs of congestive failure, and (3) those with moderate to great enlargement of the heart, with congestive failure

GROUP ONE

In Group 1, there were 10 cases, in eight of which the patients were women The age range was from 19 to 36 years, averaging 27 years at the time of onset of hemoptysis The length of time since onset of hemoptysis averaged 37 months, varying from one to 70 months All patients were well when last seen

Brief histories of three representative cases are given.

Case 1 —Mrs B F H , aged 32 years, had rheumatic fever in childhood, and was found to have mitral stenosis nine years ago About one year before this report, she coughed up one pint (473 cc) of blood, and since then had spit a considerable quantity of blood on three or four occasions There had been no cough nor any wheezing Her exercise tolerance was good, and there were no symptoms of congestive failure Several chest x-rays, a bronchogram, and three bronchoscopic examinations were noncontributory

Physical examination revealed the following blood pressure 116/70, mitral stenosis with slight cardiac enlargement, sinus rhythm, no signs of congestive failure

Case 2 —Mrs E E T , aged 23 years, had chorea at the age of 12 years Three and one half years before this report hemoptysis had occurred after intercourse Recently, on two occasions, hemoptysis had followed intercourse For two days previous to examination the patient noted slight dyspnea on exertion Her exercise tolerance was otherwise good

Physical examination revealed the following blood pressure 106/70, heart not enlarged, typical presystolic rumble of mitral stenosis, with sinus rhythm, no signs of congestive failure

Case 3 —Mr V W aged 25 years, was admitted to the hospital May 13, 1949, with chief complaint of coughing up blood The patient gave a history of intermittent hemoptysis, usually after exertion, for two years X ray of the chest made two years previously had been noncontributory Three days previous to admission the patient coughed severely, with moderate hemoptysis (sufficient to regurgitate into the nose) No other symptoms except slight dyspnea on exertion were present

Physical examination revealed the following blood pressure 130/70, mitral stenosis, with no cardiac enlargement, sinus rhythm, no signs of congestive failure X ray of the chest revealed clear lung fields, there was no evidence of mitral configuration Electrocardiogram showed diphasic P waves and right axis deviation The patient was discharged May 19, 1949, with his condition unchanged

The patient was readmitted Oct 2, 1949, with a history of persistent, severe hemoptysis of one week's duration The physical findings were unchanged except for moderate anemia The red blood cell count was 3 million, with 62% hemoglobin Treatment consisted of small transfusions, the hemoptysis ceasing Oct 6, 1949 A recent communication from his family physician stated that the patient had been seen recently, was feeling well, and was working

The cases in this group are comparable with those designated by Bland and Sweet[6] as "tight mitral stenosis " This type of case associated with hemoptysis constitutes the greatest puzzle to the physician, since there usually is no genuine evidence of congestive failure and the exercise tolerance often is quite good In only three of our cases did the history indicate that hemoptysis occurred after exertion This fact is surprising, since apparently all observers agree that blood spitting occurs as a result of increased pulmonary hypertension In the cases just summarized, the amount of blood varied from scanty to an amount sufficient (in one case) to produce moderate anemia It seems reasonable to conclude, therefore (as did Wolff and Levine[3]), that hemoptysis in this group offers no prognostic significance Not only were all these patients living after an average period of 36 months, but none of them had any significant cardiac enlargement Of the five patients seen during the past year, the average length of time since onset of hemoptysis has been 45 months

GROUP TWO

There was a striking difference in ratio of male to female in Group 2 as compared with Group 1, there being 12 males and one female The onset of hemoptysis occurred at ages ranging from 18 to 41 years, with an average age of 33 years Auricular fibrillation had developed in five cases, and there were aortic lesions in four When these patients were last seen, the average length of time since onset of hemoptysis was 44 months

Brief histories of a few cases in this group follow

Case 1 —Mrs M P , aged 42 years, had had rheumatic fever as a child In 1944 there was beginning loss of cardiac reserve In 1945, while in congestive failure, she coughed up bloody sputum About two years previous to this report, while running a vacuum cleaner, she suddenly coughed up about a pint of bright red blood There was no increased dyspnea before or after this episode, and she did not go to bed She was not on a digitalis regimen at that time There had been no hemoptysis since During the two weeks previous to examination marked congestive failure had developed

Physical examination revealed the following blood pressure 92/60, bilateral hydrothorax, aortic and mitral stenosis and insufficiency, auricular fibrillation with extreme cardiac enlargement

The patient responded well to treatment and was discharged in one week, much improved

Case 2 —Mr R F , aged 29 years, had had rheumatic fever at the age of 16 There was beginning loss of cardiac reserve five years previous to this report with dyspnea on exertion About four and one half years previous to this report he had hemoptysis with a bout of left sided failure He was relieved by a shot' after coughing up large quantities of bright red blood, and the coughing continued until hospital admission On this occasion the hemoptysis was not associated with dyspnea nor with orthopnea

Physical examination revealed the following blood pressure 100/70, heart enlarged to the left, typical murmurs of mitral stenosis and insufficiency minimal passive congestion of lungs X ray of the chest showed enlargement of the left auricle, with mitral configuration and slight passive congestion

The patient was treated expectantly with maintenance doses of digitoxin and sedation Hemoptysis continued subsiding in six days.

CASE 3 —Mr J L L., aged 39 years, was seen in August, 1947, giving a history of rheumatic fever at the age of 3 years There had been gradual loss of cardiac reserve since 1940 In April, 1946, he coughed up some blood He was in frank failure in December, 1946 The patient when last seen was dyspneic on exertion, there was orthopnea but no edema

Physical examination revealed the following blood pressure 150/80 lungs clear, mitral stenosis with auricular fibrillation Marked cardiac enlargement was revealed by examination and fluoroscopy

We have been informed that this patient died in congestive failure in May, 1949

CASE 4 —Mr C N A, aged 37 years, had had rheumatic fever at the age of 20 Valvular involvement was noted 10 years previous to this report He was dyspneic and had raised blood eight months previous to this report Two weeks previous to being seen, he had another attack, with hemorrhage There was no edema, and no dyspnea on exertion

Physical examination revealed the following blood pressure 130/84, lungs clear, moderate enlargement of heart, mitral stenosis, with sinus rhythm

The patient was seen again Jan 19, 1948, with a history of recent severe hemorrhage He knew of no reason for the attack and has been well since, with no symptoms of congestive failure His lungs were clear

When seen again Nov 9, 1948, the patient's condition was unchanged (This patient is known to be still living)

Evaluation of this group offers the most difficulty Classification was attempted by determining from the history, to the best of our ability, whether or not the hemoptysis occurred while the patient was *not* in congestive failure, although four patients had a history of congestive failure prior to onset of hemoptysis It is recognized also that some of these patients may have had normal-sized hearts at the time of hemoptysis, several years before a record was made of the heart size Ten patients in this group are known to be alive, and all but two have been seen in the past year by one of us Three, or 23 per cent, have died 17 months, 38 months, and 10 months, respectively, after onset of hemoptysis In the series of cases reviewed by Wolff and Levine,[3] 22 of which would appear to fall in this group, 11 were dead at the end of six months after onset of hemoptysis Of the 12 cases in our group with an adequate follow-up (the 13th case having been followed for only one week after onset), all survived for six months, 11 survived for one year, 10 for two years, and six are known to have survived for four years or longer Although any accurate evaluation from a statistical standpoint could be made only if all the cases had been followed until death, it seems likely that these patients survived as long as they could have had they never had a hemoptysis

GROUP THREE

Six cases fell in Group 3, four of these being males and two females The patients' ages ranged from 16 to 45 years, averaging 33 5 years at the time of onset of hemoptysis Half of the number had fibrillation and four had aortic lesions Three (50%) of these patients are now dead

Brief reports of representative cases in this group follow

CASE 1 —Mr E J, aged 33 years, had had rheumatic fever at the ages of 12 and 16 years He was unable to work for two years because of extreme lack of cardiac reserve Marked orthopnea and edema developed one month previous to hospital admission

Physical examination revealed the following blood pressure 150/60/0, moderate respiratory distress, marked pulmonary congestion, extreme enlargement of the heart, with aortic and mitral stenosis and insufficiency, liver enlarged, grade-4 edema of the legs Fluoroscopy of the chest revealed marked enlargement of all chambers of the heart and marked pulmonary congestion The electrocardiogram was interpreted to show left bundle branch block

This patient's course continued downhill Twelve days after admission to the hospital he began spitting up moderate quantities of dark red blood, continuing to do so until he died, two days later

CASE 2 —Mrs B B, aged 46 years, was admitted to the hospital Oct. 20, 1949, with a history of rheumatic fever in 1925 She complained of paroxysmal nocturnal dyspnea of two years duration, with blood streaked sputum one year previous to admission She had had marked orthopnea for one week

Physical examination revealed the following blood pressure 128/74, moisture in the right lung base, aortic and mitral stenosis and insufficiency, with auricular fibrillation heart moderately enlarged (This patient is known to be still living)

CASE 3 —Mrs P R., aged 32 years, was admitted to the hospital June 20 1948 with no history of rheumatic fever or chorea Onset of cardiac symptoms with failure occurred near term of a previous pregnancy four years ago The patient was in the seventh month of pregnancy when seen for cardiac symptoms, onset of dyspnea and orthopnea having occurred two weeks previously On the day before admission to the hospital, she coughed up a moderate amount of blood which was bright red This was her seventh pregnancy, with no abortions

Physical examination revealed the following blood pressure 100/60 acute pulmonary edema present, also mitral stenosis, with auricular fibrillation heart moderately enlarged X-ray of chest revealed prominence of left ventricle, mitral configuration, and marked pulmonary congestion The patient responded well to treatment, and subsequently was delivered at term with no difficulty

In all the cases in this group the only stress necessary for hemoptysis to occur was the burden of congestive failure, with the added burden of pregnancy in the first trimester in one case (Mrs P R) Whereas all patients in Group 1 and all but one patient in Group 2 had had repeated bouts of hemoptysis, only one in Group 3 had had more than one bout None of these patients had massive hemoptysis, two instances were described as moderate Three patients are dead, two days, five days, and 50 months, respectively, after onset of hemoptysis The average period of survival for the entire group was 14 months, while that for the number known to be dead was 19 months Although congestive failure is in itself an ominous prognostic sign, it would appear that hemoptysis in this group increases the likelihood of impending death

SUMMARY

Of 168 cases of clinically diagnosed mitral stenosis seen both in the hospital and in private practice, 29 carried a history of hemoptysis Cases were not included in this group unless the sputum was heavily streaked with blood or consisted almost entirely of frank blood The amount of blood raised varied and, although as much as a pint was raised in some cases, it was never a serious

threat to life The amount of blood coughed up had no prognostic significance since several of the patients who suffered the largest hemorrhages subsequently have done best

Prior to the suggestion by Ferguson [5] and his associates that hemoptysis in mitral stenosis is due to rupture of varices of the bronchial veins, no plausible explanation of this symptom had been offered, and while the idea is credible, proof that such rupture actually is the mechanism producing the hemorrhage is not conclusive since several patients in this series underwent bronchoscopy with no bronchial varices being noted

An attempt has been made to place these patients in three groups, largely on the basis of heart size and the presence or absence of congestive failure Group 1 includes patients with slight or no cardiac enlargement and no congestive failure Group 2 includes those with moderate to great cardiac enlargement and no congestive failure Group 3 includes those with moderate to great cardiac enlargement, with congestive failure

Patients in Group 1 correspond to those considered by Bland and Sweet [6] to have "tight mitral stenosis " These observers noted that acute pulmonary edema in their patients was at times associated with hemoptysis In several of our cases the patients were suffering from acute pulmonary edema at the time of their hemoptysis, but in most instances this was not true In three cases in this group, hemorrhage was severe but not dangerous The threat of pulmonary edema is a more compelling reason for the venous shunt operation devised by Bland and Sweet than is the danger of subsequent hemorrhage All our patients in this group have had more than one episode of bleeding, but their prognosis has nevertheless been good All cases have been observed for an average follow-up period of 36 months, and none has shown any appreciable deterioration The predominance of females in this group, as noted also by Bland and Sweet,[6] is striking

Thirteen patients have been seen who had had one or more episodes of hemoptysis, and who had moderate or great cardiac enlargement, who were not in congestive failure at the time hemoptysis occurred In some of these cases congestive failure subsequently has developed, but a particular effort was made to determine that congestive failure was not present at the time of hemorrhage before including the case in this group In most instances, careful follow-up in these cases has shown that hemoptysis was an isolated episode and not related to any worsening of the patient's cardiac condition In some of these cases the failure of hemoptysis to alter the patient's prognosis was very impressive Six patients in this group have survived for more than four years, and several of them have continued at their usual occupation

Six patients who had large hearts and who were in congestive failure have had hemoptysis Two of these died of congestive failure in two days and five days, respectively, after hemorrhage One patient lived for 50 months, and died in recurrent congestive failure The three survivors do not provide a statistically significant follow-up It appears that patients with mitral stenosis in congestive failure who have hemoptysis probably do not do so well as those not suffering a hemoptysis In view of the beneficial effect of reducing blood volume by venesection in congestive failure, this situation is difficult to explain It is possible that study of a larger number of cases in this group will reveal that hemoptysis has not actually contributed significantly to the decline of the cardiac condition

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ETIOLOGY AND TREATMENT OF SERUM POTASSIUM DEFICITS

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Disturbances in the metabolism of potassium are a problem of clinical significance The study of the behavior of this ion in disease was accelerated by the development of the flame photometer [1] This instrument has allowed rapid quantitative determinations to be made in volume Considerable information, primarily on a research basis, has accumulated concerning mechanisms of shifts in body potassium [2] and the symptoms and signs associated with these changes [3] Relatively little information, however, has been tabulated concerning the prophylaxis or therapy of potassium deficits, except in a few selected situations, such as infantile diarrhea,[4] diabetic acidosis,[5] and a small series of postoperative patients [6]

The following report summarizes briefly the mechanisms responsible for deficits of potassium and the associated clinical symptomatology Actual experience as to the etiology and treatment of potassium deficits in 150 patients is tabulated and discussed, with recommendations concerning treatment schedules

MECHANISMS CAUSING DEFICITS OF POTASSIUM

Intracellular and Extracellular Potassium Deficits — In general, there are two mechanisms which may cause loss of potassium from both the intracellular and extracellular compartments of the body The first is inadequate intake of potassium This occurs when food intake is restricted and parenteral fluids which do not contain

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[1] Hald P M The Flame Photometer for the Measurement of Sodium and Potassium in Biological Material J Biol. Chem **167**: 499 (Feb) 1949 Berry J W Chappel D G and Barnes, R B Improved Method of Flame Photometry Indust & Engin Chem (Analyt Ed) **18** 19 (Jan 15) 1946

potassium are used Potassium deficits arise in such situations because the urine is never potassium-free, and the ion continues to be lost from the body although none is supplied [7]

The second mechanism is the accelerated loss of potassium from the body The two major routes for the excretion of potassium, in health, are the urine (90%), and the stool (10%) Increased excretion in the urine may occur because of altered tubular function, with impaired reabsorption Altered tubular function may be caused by changes in pH, notably alkalosis,[8] shock, anoxia, hormones (desoxycorticosterone acetate),[9] and pathological changes in the tubules secondary to various types of renal disease, such as the healing stages of the upper or lower nephron nephrosis,[10] rare forms of primary renal tubular disease, and occasional instances of chronic glomerulonephritis Accelerated potassium excretion in the urine also occurs in any state associated with a negative nitrogen balance of any etiology as potassium, often in excess of the nitrogen loss, moves out of the cells with nitrogen during tissue catabolism [2] This action has been demonstrated recently secondary to corticotrophin (ACTH) and cortisone therapy [11] Administration of large volumes of isotonic saline may cause loss of potassium by diuresis [12] Increased loss of potassium in the urine also occurs with dehydration [6]

Since 6 to 7 L of gastrointestinal fluid—gastric juice, bile, pancreatic fluid, intestinal fluid—with a potassium concentration which varies but is usually approximately equal to or higher than that of the extracellular fluid [13] is secreted daily into the intestinal tract and reabsorbed, important loss of potassium from the body may occur if the gastrointestinal content is lost via fistulas of any type, nasogastric suction apparatus, or diarrhea

Deficit of Extracellular Potassium —Rapid shifts of potassium from the serum and interstitial fluid into the cells of the body occur because of the effect of drugs or other substances which accelerate either carbohydrate or protein synthesis Thus, insulin,[14] large amounts of dextrose,[15] and testosterone [16] cause a shift of potassium from the extracellular to the intracellular compartment The rare disease known as familial periodic paralysis [3] also causes a rapid shift of potassium from the extracellular to the intracellular fluid Any factor, as administration of large volumes of parenteral fluid, that results in hemodilution will also cause a drop in serum potassium concentration [12]

The serum potassium level is adequate for most clinical purposes, since the symptomatology of potassium deficits can usually be correlated with the serum concentration Also, the intracellular levels (which cannot be determined) are usually reflected by the serum concentration if hydration and renal function are normal

SYMPTOMS AND SIGNS OF POTASSIUM DEFICIT

Symptoms and signs of potassium deficit have usually been related to the change in the serum potassium level (Some workers feel that the balance between the extracellular and intracellular components may be the more important factor [17] Decreased serum potassium concentration affects neuromuscular physiology involving skeletal muscle, cardiac muscle, and the smooth muscle of the gastrointestinal tract Weakness to paralysis of the muscles of the trunk and extremities (rarely the muscles supplied by the cranial nerves) may occur when the serum potassium level falls below 8 to 10 mg per 100 cc (2 05 to 2 56 mEq per liter) [18] Changes in conduction, irritability, and contractility of cardiac muscle occur with levels under 10 to 12 mg per 100 cc (2 56 to 3 07 mEq per liter) These changes are manifested by alterations in the electrocardiogram,[3] consisting of prolongation of the Q-T interval, and occasionally the P-R interval, S-T depression, and decrease in amplitude and change in contour of the T waves Clinically, systolic murmurs and gallop rhythms, cardiac dilatation, and hypotension have been noted If the potassium deficit is severe, cardiac arrest and death may occur Actual necrosis of cardiac muscle has been produced by potassium depletion [19] Lowered serum potassium may affect the musculature of the gastrointestinal tract to cause decreased motility and inhibition obstruction (adynamic ileus) [20]

INCIDENCE AND CAUSE OF POTASSIUM DEFICIT IN 150 PATIENTS

In the two-year period March 1, 1948, to March 1, 1950, there were 6,196 serum potassium determinations made in patients in a 3,000 bed hospital The flame photometer mentioned earlier was used in these studies Results in 1,803 (29 1%) determinations were lower than 15 mg per 100 cc (3 84 mEq per liter) and 383 (6 2%) were higher than 23 mg per 100 cc (5 89 mEq per liter), giving a total of 35 3% abnormal determinations (The normal range for serum potassium in our laboratory is 16 to 22 mg per 100 cc [4 1 to 5 6 mEq per liter]) The increasing number of determinations per month, as more knowledge of

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2. (*a*) Fenn W O The Role of Potassium in Physiological Processes, Physiol Rev **20** 377 (July) 1940 (*b*) Howard, J E. and Bigham R S Relation of Potassium to Nitrogen During Anabolism and Catabolism of Protoplasm in the Conference on Metabolic Aspects of Convalescence, Transactions of the Eleventh Meeting New York, Josiah Macy Jr Foundation 1945, p 7 (c) Darrow D C. Disturbances in Electrolyte Metabolism and Their Management, Bull New York Acad Med. **24**: 147 (March) 1948 (*d*) Danowski, T S Newer Concepts of the Role of Potassium in Disease Am J Med **7**: 525 (Oct) 1949 (*e*) Elkinton J R and Winkler A W Transfers of Intracellular Potassium in Experimental Dehydration J Clin Investigation **23**: 93 (Jan) 1944 (*f*) Martin H E. Wertman M Westover, L Simonsen D G and Mehl J W Clinical Potassium Problems California Med **72**: 933 (March) 1950

3 (*a*) Brown, M R. Currens J H and Marchand J F Muscular Paralysis and Electrocardiographic Abnormalities Resulting from Potassium Loss in Chronic Nephritis, J A M A **124** 545 (Feb 26) 1944 (*b*) Holler J W Potassium Deficiency Occurring During Treatment of Diabetic Acidosis J A M A **131**: 1186 (Aug. 10) 1946 (c) Martin H E. and Wertman M Serum Potassium Magnesium and Calcium Levels in Diabetic Acidosis J Clin Investigation **26**: 217 (March) 1947 (*d*) Gass H Cherkasky M and Savitsky N Potassium and Periodic Paralysis A Metabolic Study and Physiological Considerations Medicine **27**: 105 (Feb) 1948 (*e*) Winkler A W, Hoff H E. and Smith P K Electrocardiographic Changes and Concentrations of Potassium in Serum Following Intravenous Injection of Potassium Chloride Am. J Physiol **124** 478 (Nov) 1938 (*f*) Martin H E. and Wertman M Electrolyte Changes and Electrocardiogram in Diabetic Acidosis Am Heart J **34**: 646 (Nov) 1947 (*g*) Tarail R. The Relation of Abnormalities in the Concentration of Serum Potassium to Electrocardiographic Disturbances, Am J Med **5** 828 (Dec) 1948

4 Govan C. D Jr and Darrow D C: The Use of Potassium Chloride in the Treatment of the Dehydration of Diarrhea in Infants J Pediat. **28** 541 (May) 1946

5 (*a*) Butler A M Talbot N B Burnett C H Stanbury J B and MacLachlan E A Metabolic Studies in Diabetic Coma Tr A Am Physicians **60**: 102 1947 (*b*) Danowski T S Peters J H Rathburn J C. Quashnock, J M and Greenman L. Studies in Diabetic Acidosis and Coma with Particular Emphasis on the Retention of Administered Potassium, J Clin Investigation **28**: 1 (Jan) 1949 (c) Martin H E Wertman M and Hillier P Potassium Deficits in Diabetic Acidosis with Particular Reference to Problems in Therapy Am Diabetes A **10** 161 1950

and interest in electrolyte problems developed, is clearly demonstrated by the increase from 26 serum potassium determinations in March, 1948, to 509 determinations in August, 1949

The figure of 6,196 determinations represents approximately 3,098 patients This figure is estimated on the basis that each patient had two potassium determinations (This estimation was obtained from the figures for two periods—January, 1949, and November, 1949—when each patient had 1 7 and 2 08 determinations, respectively) The number of patients with a low serum potassium level, using the figure of two determinations per patients, would be approximately 1,000 for the two-year period (This is in a hospital of 3,000 beds)

One hundred and fifty of these patients, the majority of whom were seen by us in the six-month period from January to July, 1949, form the basis of this report (We constituted a committee who supervised potassium therapy during this six-month period, until the problems involved became adequately clarified and the procedures standardized) There were 100 patients who had medical conditions or unoperated surgical conditions, and 50 postoperative surgical patients The vast majority of the patients (122, or 81%) had gastrointestinal disorders, such as intestinal obstruction, cholecystic disease, peritonitis, pyloric obstruction, pancreatitis, and gastrointestinal malignancy A small group (28, or 19%) were due to a variety of causes, as diabetic coma undergoing vigorous insulin therapy (10 patients), renal disease (five patients), and acute infection (five patients)

Table 1 tabulates the basic etiology responsible for the low serum potassium in each patient. The significant role of poor or no potassium intake as a cause of low serum potassium is demonstrated since 131 of the 150 patients (87 4%) had decreased potassium intake Ninety of these 131 patients were on nasogastric suction and were receiving parenteral fluids which did not contain potassium The average period the patients were on nasogastric suction prior to the development of the low serum potassium was 5 3 days, plus an average of 7 5 days of poor or no food intake prior to the use of naso gastric suction Forty-one of the patients were not on nasogastric suction but had had prolonged periods of poor or no food intake, averaging 16 3 days

Nine (6%) of the 150 patients had a low serum potassium due to accelerated loss of potassium from the body via the urine or gastrointestinal tract—nasogastric suction, fistulas, or diarrhea

Ten (6 7%) of the 150 patients had low serum potassium levels owing to the rapid shift of potassium from the extracellular fluid into the cells under the influence of insulin used in the therapy of diabetic coma

TABLE 1 —*Basic Etiology of Potassium Deficiency in 150 Cases**

Basic Etiology of Deficiency	No of Cases	Average No of Days Basic Etiology Operative
I. Decreased Intake of Potassium		
A Poor food intake or none	41	16.3
B Nasogastric suction and potassium free parenteral fluids plus previous poor food intake	90	5.3 of suction + 7.5 previous poor food intake
II Increased Losses of Potassium from Gastrointestinal Tract or Urine		
A Diarrhea	4	11
B Ileostomy	1	14
C Desoxycorticosterone (doca ®) therapy	2	5
D Lower nephron nephrosis recovery phase	2	8+
III Shift of Potassium into the Cells		
Diabetic coma under therapy with insulin	10	1
Total	150	

* Acid base balance analyzed separately See text

The importance of alkalosis as a cause of serum potassium deficits is demonstrated by the fact that 64 (42 7%) of the patients had alkalosis, in addition to the mechanisms listed in Table 1 Acidosis was present in 15 patients (10%), occurring primarily in those patients with diabetic coma or diarrhea Thirty-six per cent of the patients had a normal carbon dioxide combining power, and 11 3% had not had a determination of the carbon dioxide combining power

While it was frequently impossible to evaluate the symptoms and signs due to hypopotassemia in the presence of a serious primary disease, an attempt was made to determine the relation of the serum potassium level to the state of the patient and the outcome The clinical condition of 34 patients (22 6%) with a serum potassium under 10 mg per 100 cc (2 56 mEq per liter) was very poor, as evidenced by such findings as profound muscle weakness, inhibition obstruction (adynamic ileus), cardiac dilatation, hypotension, and gallop rhythms

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6 Randall H T Habif D V Lockwood J S and Werner S C Potassium Deficiency in Surgical Patients Surgery 26 341 (Sept) 1949

7 Mudge C H Foulks J and Gilman A The Renal Excretion of Potassium Proc Soc Exper Biol & Med 67 545 (April) 1948 Tarail R. and Elkinton J R Potassium Deficiency and the Role of the Kidney in Its Production J Clin Investigation 28 99 (Jan) 1949

8 Burnett, C H Barrows B A Commons R R and Towery B T Studies of Alkalosis II Electrolyte Abnormalities in Alkalosis Resulting from Pyloric Obstruction J Clin Investigation 29:175 (Feb) 1950

9 Thorn G W and Forsham, P H Metabolic Changes in Man Following Adrenal and Pituitary Hormone Administration in Pincus G Recent Progress in Hormone Research The Proceedings of the Laurentian Hormone Conference New York Academic Press vol 4 1949 p 229

10 Martin H E and Fields I Unpublished data on urine electrolytes in lower nephron nephrosis

11 Sprague R G Powers M H Mason H L Albert A. Mathieson D R. Hench P S Kendall E. C Slocumb C H and Polley H F Observations on Physiologic Effects of Cortisone and ACTH in Man Arch Int. Med 85:199 (Feb) 1950

12. Stewart J D and Rourke G M The Effects of Large Intravenous Infusions on Body Fluids J Clin Investigation 21 187 (March) 1942

13 Gamble J L. Chemical Anatomy Physiology and Pathology of Extracellular Fluid A Lecture Syllabus ed 5 Cambridge Mass Harvard University Press 1947 Lockwood J S and Randall H T The Place of Electrolyte Studies in Surgical Patients Bull. New York Acad Med 25 228 (April) 1949

14 Harrop G A Jr and Benedict G M The Participating Inorganic Substances in Carbohydrate Metabolism J Biol Chem 59:683 (April) 1924

15 Flock E V Bollman J L Mann F C and Kendall E C The Effect of the Intravenous Injection of Glucose and Other Substances on the Concentration of Potassium in the Serum of the Dog J Biol Chem 125 57 (Sept.) 1938

16 Butler A M Talbot, N B and MacLachlan E A Effect of Testosterone Therapy on Concentration of Potassium in Serum Proc Soc Exper Biol & Med 51 378 (Dec) 1942.

17 Harvey A M Some Physiological Experiments of Nature in the Field of Neuromuscular Function Tetra-ethyl Pyrophosphate in the Treatment of Myasthenia Gravis Potassium Deficiency Potassium Intoxication Proc Inst Med Chicago 17 182 (Nov 15) 1948

18 Footnotes 2a 2d 3a 3b and 17

19 Darrow D C and Miller H C The Production of Cardiac Lesions by Repeated Injections of Desoxycorticosterone Acetate J Clin Investigation 21 601 (Sept.) 1942

20 Winter H A Hoff H E and Dso L. Effect of Potassium Deficiency upon Gastrointestinal Motility Federation Proc 8 169 (March) 1949

Electrocardiograms were taken on many of the patients These tracings showed the characteristic changes described in hypopotassemia in the majority of instances

In retrospect, 10 patients (6 7%) may well have died of hypopotassemia

TREATMENT RESULTS

The problems in therapy resolved themselves into three considerations (1) the best type of solution to use and the mode of administration, (2) the prophylactic requirement for potassium in patients who were not eating, and (3) the average amount of potassium required to correct acute and chronic deficits

Type of Solution —The solution to be used for the prophylaxis and treatment of potassium deficits in a large hospital had to be simple to prepare and in such form as to be practical for use in many different types of electrolyte imbalance For these reasons we used potassium chloride, 1 gm in 15 cc of distilled water, prepared in vials and autoclaved, as our stock solution for intravenous use The proper number of grams of potassium could then be added to whatever intravenous solution was required for other purposes, as dextrose in water, isotonic saline, ⅙ molar sodium lactate, or 0 9% ammonium chloride

TABLE 2 —*Potassium Requirement Calculated from Balance Studies*

Diagnosis	Potassium in Urine (Range) Gm	Potassium in Naso-gastric Suction Fluid (Range) Gm	Total Potassium Lost (Range) Gm 24 Hr	Total KCl Required on Basis of Measured Loss Gm /24 Hr
Appendectomy for perforated appendix	1 1 to 1 7	0 06 to 0 8	1.2 to 1 70	2 4 to 3 5
Repair of duodenal perforation (stab wound)	0.0 to 1.8	0.1 to 0 4	0 0 to 1 8	1.8 to 8 0
Gastro-enterostomy and vagotomy for pyloric obstruction (peptic ulcer)	1 4 to 2 0	0 02 to 1 1	1 4 to 3.1	2.8 to 6.1
Ileostomies for recurrent volvulus	0 96	0 54	1 5*	2 0

* Received 0.5 gm K.

For prophylaxis of potassium deficits we used a 0 1 to 0 2% solution of potassium chloride (1 to 2 gm of potassium chloride per liter of any type of intravenous fluid required) given no faster than 1 L (1 gm) per hour For therapy of serious potassium deficits we used a 0 3 to 1 0% solution (3 to 10 gm of potassium chloride per liter of any type of intravenous fluid required), administered slowly and followed by frequent serum potassium determinations or electrocardiograms (This solution is hypertonic and may cause pain in the vein We have seen no thrombi from its use) Potassium has also been administered in any of the fluids which can be given by hypodermoclysis, in 0 1 to 0 2% concentration, without local reactions

For oral administration we used a 1% potassium chloride solution, as it was frequently necessary to administer this medication through a nasogastric tube

Prophylaxis of Deficits —Table 2 shows the average daily loss of potassium via the urine and in the nasogastric suction fluid in four patients who were not receiving potassium and in whom potassium balance studies were done The daily potassium requirement in these patients, expressed as grams of potassium chloride, varied from 1 8 gm to 6 1 gm

The 24-hour loss of potassium in nasogastric suction fluid varied in our patients from 0 1 to 1 4 gm The concentration of potassium in the gastric fluid varied from 5 to 51 mg per 100 cc (1 3 to 13 1 mEq per liter) with an average of 20 to 30 mg per 100 cc (5 12 to 7 68 mEq per liter) An average range of urinary potassium loss cannot be given, since the amount varied widely, depending on the serum potassium concentration, the urine volume, renal function, and pH of the blood

The prophylactic requirement of potassium chloride to maintain a normal serum potassium level in five patients receiving parenteral fluids for several days varied from 2 to 6 4 gm of potassium chloride, with an average of 4 gm While such studies are obviously less accurate than balance studies, since the amount of potassium required is not known unless the urinary potassium excretion is measured, certain information can be obtained from them concerning range of dosage

From such studies we concluded that 3 to 6 gm of potassium chloride daily is an average prophylactic amount for patients requiring several days of parenteral fluid therapy We prefer to err on the side of too much rather than too little potassium for prophylaxis, since excess potassium is readily excreted by the kidney unless renal function is seriously impaired

Treatment of Acute and Chronic Deficits —Our experience in the correction of potassium deficits has developed with practice and is documented, with illustrative examples from the series of 150 patients, in Tables 3, 4, and 5

With a large staff of interns and residents, considerable caution was entertained early with regard to rapid correction of deficits, because of the potential dangers of intravenous potassium therapy If symptoms were not alarming, it was felt wiser to take several days to correct deficits Thus, early, far too little potassium was given per day (2 to 6 gm of potassium chloride), so that many days elapsed before the serum level became normal With low serum potassium levels of long standing, large amounts of potassium are required, as can be seen in Table 3, where in 15 patients the requirements for correction of the serum level varied from 8 to 35 gm of potassium chloride given over a period of 3 to 21 days

Table 4 illustrates more rapid, competent correction of acute and chronic potassium deficits This Table also illustrates the difference in the amount of potassium chloride required to correct acute deficits (3 to 9 gm), as contrasted with chronic deficits associated with serious cellular depletion (33 to 40 gm)

As the result of our studies, shown in Tables 3 and 4, we now give 3 gm of potassium chloride intravenously in 24 hours for the correction of acute deficits This is in addition to the prophylactic maintenance dose of 3 to 6 gm For serious, chronic deficits we now give 10 to 20 gm of potassium chloride intravenously in 24 hours, or 10 gm intravenously and 10 gm orally, if the oral route can be used

As soon as patients are able to eat, potassium deficits usually cease to be a problem since an adequate amount of potassium can be obtained from the average diet for maintenance and gradual correction of deficits For this reason we have laid little stress on oral potassium, usually, if the patient is able to take oral medications, some form of diet can also be taken. Oral potassium in liquid form has been administered to some patients through a nasogastric tube It has also been used to supplement the dietary intake of potassium in some instances

The results of potassium therapy in five patients with diabetic coma are listed separately, as this is a somewhat special problem In patients 1, 2, and 3 in Table 5, potassium administration was started early in the course of the treatment of the diabetic coma, with the result that the serum potassium was maintained at a normal level throughout treatment. In patients 4 and 5, therapy was started only after a drop in the serum potassium had occurred The amount of potassium required to correct the body potassium deficit in these five patients ranged from 8 88 to 20 48 gm of potassium chloride in 24 hours

As the result of the above experience and other studies in diabetic coma,[5c] we now give 12 to 16 gm of potassium chloride to all patients in diabetic coma during the first 24 hours of intensive insulin therapy, starting as soon as serious dehydration is corrected and renal function is known to be adequate Two to 4 gm of potassium chloride is given intravenously as a 0 1 to 0 2% solution, and 10 to 12 gm orally as a 1% solution

There were several infants and children in our series of 150 patients with potassium deficits The majority of these patients had infantile diarrhea In most instances we used the formula recommended by Govan and Darrow[4] for infants and children (0 20 gm of potassium chloride per kilogram of body weight per 24 hours)

TABLE 3—*Results of Potassium Therapy*

Diagnosis	Serum Potassium Before Treatment		Serum Potassium After Treatment		Duration of Treatment Days	Amount Potassium Chloride Used for Treatment		
	Mg per 100 Cc	mEq per L	Mg per 100 Cc	mEq per L		I V Gm	Oral Gm	Total Gm
Relief of small bowel obstruction *	9	2.3	17	4 35	4	7	22	29
Pyloric obstruction ulcer *	10	2.50	16	4 1	18	38		38
Pyloric obstruction ulcer *	11	2.82	16	4 1	7	21		21
Vomiting etiology undetermined †	11	2.82	19	4.86	5	21		21
Hysterectomy (fibromyomata) ‡	13	3.33	20	5 12	7	24		24
Abdominal exploration (carcinoma of pancreas) ‡	12	3 07	20	5 12	4	10	45	55
Gastric resection (carcinoma of stomach) †	9	2 3	18	4 61	5	24		24
Colon resection (carcinoma of colon) ‡	8	2 05	14	3 58	5	27	26	53
Appendectomy perforated appendix *	11	2.82	17	4 35	7	12	11	23
Gastroenterostomy (gastric carcinoma) †	11	2.82	18	4.61	21	43		42
Cholecystostomy (cholecystitis and cholangitis) *	12	3 07	24	6 14	6	33		33
Abdominal exploration hepatitis †	10	2.57	19	4.86	12	18	40	58
Pyloric obstruction ulcer *	12	3 07	17	4.35	3	11		11
Pancreatitis ‡	12	3 07	18	4 61	9	13	10	23
Excision of bleeding peptic ulcer †	9	2.3	15	3.84	8	8		8

* Small amount liquid diet
† No food intake
‡ Soft diet

TABLE 4—*Potassium Requirements in Chronic Versus Acute Potassium Deficits*

Diagnosis	Serum Potassium		Time to Correct Deficit Days	Intake/Potassium			Output/Potassium			Balance Potassium for Period Gm	Total KCl Required to Correct Deficit Gm
	Mm per 100 Cc.	mEq per L		Intravenous Gm	Oral Gm	Total Gm	Urine Gm	Gastric Gm	Total Gm		
Chronic											
Poor food intake plus diarrhea	7 20	1 79-5 12	8	3	15	18	0.5*		0 5*	17 48	33
Colostomy colectomy and nephrectomy for carcinoma of colon	8-27	2 1 -6 86	2	10	10.5	20.5	0 65		0.65	19.85	39 70
Acute											
Pyloric obstruction (peptic ulcer) with acute alkalosis	11 17	2.82-4 35	2	6 9		6.9	5 0	0.3	5.3	1 6	3 2
Appendectomy for perforated appendix generalized peritonitis	11 17	2.82-4.35	7	10.58	1.62	12.2	6 4	1.1	7.5	4 7	9 4

* Plus potassium in diet

TABLE 5—*Therapy of Potassium Deficits in Diabetic Coma (During 24 Hr period)*

Patient	Serum Potassium				Potassium Intake			Potassium Output Urine Gm	Potassium Balance Gm	Total Potassium Chloride Required Gm
	Start of Therapy Mg per 100 Cc	End of Therapy Mg per 100 Cc	Start of Therapy mEq per L	End of Therapy, mEq per L	Intravenous Gm	Oral Gm	Total Gm			
1	19.5	18 7	4.99	4 75		0 76	0 76	1.57	5 19	10.38
2	16 5	16.5	4.2	4.2		9 14	9.14	4 7	4 44	8.88
3	22.2	24 5	5 6	6.27		6.80	6.80	0.97	5.83	11.06
4	11	17	2.82	4 35	3.5	7.8	11.3	1 06	10.24	20 48
5	9.2	22	2.36	5 6		8.22	8 22	2.14	6 05	12.16

HIGH SERUM POTASSIUM LEVELS

For completeness, it might be briefly stated that high serum potassium concentrations occur because of impaired glomerular filtration, hemoconcentration, rapid tissue breakdown, or too rapid intravenous administration of potassium Therapy is frequently difficult The type used depends on the etiology of the increased level, and includes extrarenal removal of potassium by such procedures as the artificial kidney, renal removal by diuresis induced by large volumes of isotonic saline administered intravenously, shift from serum into the cells by use of insulin and dextrose, and antagonism of the physiological effects of high serum potassium by the use of calcium In our series, high serum potassium levels were usually associated with impaired renal function or hemoconcentration

COMMENT

Our clinical results are in accord with present concepts of the mechanisms of potassium loss as outlined above The largest number of deficits occurred in patients with poor or no intake of potassium, and many were related to the occurrence of alkalosis A smaller number of serum potassium deficits were due to accelerated loss from the body via gastrointestinal content loss, urinary loss, or rapid shift into the cells in the therapy of diabetic *coma*

While the gross mechanisms of potassium changes in the body are known, many of the fundamental problems, such as the mechanisms by which potassium enters the cell against a high diffusion gradient, the factors governing tubular reabsorption, and the forces that prevent cellular potassium from being supplied to correct serious but small extracellular deficits, are unsolved

Since the normal kidney can conserve potassium rigorously in the face of need, it is hard to understand why, in the presence of a supply of potassium from tissue breakdown (this occurs in most postoperative patients or patients who are not eating), the serum level cannot be maintained In some patients, factors, such as alkalosis or shock, which alter the ability of the kidney to conserve potassium are known, but in other patients the mechanisms are obscure and may well be hormonal In this regard we have seen a few patients on nasogastric suction receiving potassium-free parenteral fluids, who nevertheless maintained a normal serum potassium level for some time (five to 10 days) This is presumably owing to the derivation of potassium from tissue breakdown, combined with decreased renal excretion

The two major problems in therapy are the hazard of intravenous potassium administration and the estimation of the amount of potassium required to correct deficits The hazard of intravenous therapy lies in the narrow range of normal serum potassium 16 to 22 mg per 100 cc (4 1 to 5 6 mEq per liter) and the small amount of potassium in the total extracellular fluid (1 5 to 2 5 gm) Small alterations in the serum potassium may be lethal, since death due to cardiac standstill occurs at serum potassium levels between 40 and 50 mg per 100 cc (10 26 to 12 8 mEq per liter) One to 2 gm of potassium given rapidly may cause such a concentration This is avoided by dilution of the potassium in a liter of fluid

When a serious potassium deficit associated with symptoms is present, large amounts of intravenous potassium are urgently required If frequent serum determinations cannot be made, the direct writer electrocardiogram is an excellent method of following the serum potassium level[21] With the use of serial tracings, a fairly good estimation of the serum concentration can be made from the character and height of the T waves Potassium can be given safely until the T waves become high and peaked

Since the body store of potassium is approximately 150 to 175 gm , most of which is in the cells, 20 to 40 gm of potassium chloride may be required to correct serious deficits In such circumstances, intravenous therapy appears to be of little hazard since there is a rapid shift of the administered potassium into the depleted cells

While we were well aware of the value of previously recommended repair and prophylactic fluids[22] (particularly those containing such ions as calcium, magnesium, and phosphate), we were faced with the problem of being unable to obtain more than one solution for both prophylaxis and repair of potassium deficits Also, we prefer to "tailor make" repair solutions to meet the particular electrolyte problem involved This is done most easily by the use of stock solutions of potassium, calcium, or magnesium, added to the ordinary standard intravenous fluids, such as isotonic saline and 5 to 10% dextrose in water or saline, in the amounts required to correct the particular deficit or deficits

SUMMARY

In the two-year period, March, 1948, to March, 1950, 6,196 serum potassium levels were determined Of the levels, 29 1% were low and 6 2% were high Approximately two serum potassium determinations were done per patient

The disease entities and the mechanisms responsible for serum potassium deficits in 150 patients, the majority of whom were seen during a six-month period by us, are tabulated One hundred and thirty-one (87 4%) patients had various types of gastrointestinal disorder Ninety patients (60%) were on nasogastric suction and were receiving no potassium in their parenteral fluids They had an average of 7 5 days of poor or no intake of food before suction was started and an average of 5 3 days on suction before the serum potassium was found to be low Forty-one patients (27 4%) who were not on nasogastric suction had had a prolonged period of poor or no food intake, averaging 16 3 days As to the role of acid-base balance, 42 7% of the patients had alkalosis, 10% acidosis, 36% a normal carbon dioxide combining power, and 11 3% had no determination of the carbon dioxide combining power

Results of therapy are listed As the result of our studies, the following treatment schedule is suggested for adults For prophylaxis of potassium deficits, in patients who are not eating and are maintained on parenteral fluids, 3 to 6 gm of potassium chloride intravenously is required daily in 0 1 to 0 2% concentration (1 to 2 gm per liter of whatever intravenous solution is required)

For the correction of deficits assuming adequate renal function the following is suggested

For recent, acute deficits, 3 gm of potassium chloride daily given intravenously as 0 1 to 0 2% solution until deficit is corrected is recommended, in addition to the daily prophylactic dose

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[21] Stephens F 1 Paralysis Due to Reduced Serum Potassium Concentration During Treatment of Diabetic Acidosis Ann Int. Med 30 1272 (June) 1949

[22] Footnotes 4 and 5a Burnett, C. H., and Barrows B A Repair Solutions in the Treatment of Metabolic Acidosis and Alkalosis M Clin North America 32 1293 (Sept) 1948

In cases of diabetic coma undergoing treatment, 12 to 16 gm of potassium chloride should be given during the first 24 hr of intensive insulin treatment—2 to 4 gm of potassium chloride intravenously (0 1 to 0 2% concentration), and 10 to 12 gm orally Therapy should be started as soon as dehydration is partially corrected and renal function is found to be adequate

In severe chronic deficits, 10 to 20 gm of potassium chloride should be given intravenously as a 0 3 to 1% solution, or 10 gm intravenously and 10 gm orally, if the oral route of administration is possible

For infants the dosage schedule recommended by Darrow (0 20 gm of potassium chloride per kilogram of body weight per 24 hours) may be used

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HYPOVENTILATION SYNDROME IN BULBAR POLIOMYELITIS

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Because of the complex nature of respiratory inadequacy due to bulbar poliomyelitis and the severity of associated disturbances in acutely ill patients with this disease, there is little precise knowledge of the disturbed respiratory mechanism itself In a patient whose muscles of respiration do not coordinate and whose respiratory air flow pattern is grossly irregular, it is sometimes difficult to tell whether the irregularity is caused by involvement of the respiratory center or by the airway difficulties engendered by cranial nerve involvement Detailed attention to the maintenance of a clear airway, auscultation over the larynx, and visual observation of the character of the patient's respiratory effort often help to differentiate respiratory center involvement from the irregularity that arises as a result of the protective reflexes that are invoked to prevent the pulmonary aspiration of mucus and saliva

The gross irregularity of breathing and the ventilatory inadequacy which may be associated are part of the classical picture of bulbar poliomyelitis, and have been adequately described by numerous observers When a clear airway has been ensured and the respiratory defect persists, the latter is then attributable to respiratory center involvement The nature of the defect may be apparent clinically in two ways (1) gross irregularity of the rate and rhythm of respiration, and (2) incoordination of the various muscles of respiration In addition, a third and perhaps more important type of respiratory defect occurs This has received passing notice by the clinician,[1] but has not been subjected to precise investigation

This third type of respiratory defect in bulbar poliomyelitis, or what shall be termed the hypoventilation syndrome, consists of a decreased sensitivity of the respiratory center to the partial pressure of carbon dioxide in arterial blood This results in lowered pulmonary ventilation which, in these circumstances, is not attributable either to a compromised airway, to a significant defect of lower motor neurones or muscles of respiration, or to the incoordination of respiratory motor activity It is attributable to a diminished respiratory drive, and in some ways is analogous to the situation in which the respiratory center has been depressed by an overdose of barbiturate The hypoventilation syndrome is the subject of this communication

During the course of an investigation of the management of respiratory difficulties in bulbar poliomyelitis, four patients were seen whose respiration was such as to include them for consideration in this category [2] The first of these was a 17-year-old male with bulbospinal poliomyelitis, who at times breathed at a rate of only 4 respirations per minute and became cyanotic when permitted to lapse into these periods of bradypnea Underventilation could be prevented, even though his mental state was somewhat clouded, simply by giving him fairly frequent and firm verbal orders to breathe Later grossly irregular and inadequate breathing developed in this patient and he was treated with electrophrenic respiration during that period [3] The second patient was a 43-year-old woman with bulbospinal poliomyelitis who exhibited the same phenomenon but was more refractory to voluntarily sustaining adequate ventilation because of her mental state That is to say, she responded to single and repeated orders to breathe more deeply, but would not continue to do so for more than two or three breaths after the last command The third and fourth patients were 9 and 11-year-old boys with bulbar poliomyelitis Inasmuch as they were the only ones in whom quantitative data were obtained, only their cases will be reported in detail

METHOD

Arterial blood gas tension analysis by the method of Riley and others [4] was begun within 20 min after obtaining the samples The arterial oxygen and carbon dioxide contents were determined by the method of

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Aided by a grant from the National Foundation for Infantile Paralysis

From the Department of Physiology Harvard School of Public Health and the Children s Medical Center Boston

[1] Wilson J L Outline of Essential Treatment of Bulbar Poliomyelitis in Poliomyelitis Papers and Discussions Presented at the First International *Poliomyelitis* Conference International Poliomyelitis Congress Philadelphia J B Lippincott Company 1949 p 245

[2] Dr *Charles A Janeway* and Dr William Berenberg of the Children s Medical Center and Dr Louis Weinstein of the Haynes Memorial Hospital in Boston allowed us to observe these patients and encouraged the study

[3] Sarnoff S J Maloney J V Jr Sarnoff L C. Ferris B G Jr and Whittenberger J L. Electrophrenic Respiration in Acute Bulbar Poliomyelitis Its Use in Management of Respiratory Irregularities J A M A **143** 1383 (Aug 19) 1950

[4] Riley R. L. Proemmel D D and Franke R. E *Direct Method* for Determination of Oxygen and Carbon Dioxide Tensions in Blood J Biol Chem **161** 621 1945

Van Slyke and Neill [5] Electrophrenic respiration (EPR) was administered by applying an intermittent electrical potential over the motor point of the phrenic nerve [6] Respiratory air flow patterns were taken with the clinical pneumotachograph of Silverman and Whittenberger [7]

REPORT OF CASES

CASE 1 —A B, a boy aged 9 years who was admitted to the hospital Sept 25, 1949, had had coryza and moderate headache for three days prior to admission The following day a slight fever and stiff neck developed, and this was followed with difficulty in swallowing, a nasal voice, and regurgitation through his nose on the day before admission On admission, the temperature was 102 4 F, pulse 104, and respirations 32 The patient was drowsy and irritable, and an accumulation of secretions was noted in the pharynx He exhibited moderate stiffness of the neck, and spasm of the back and hamstring muscles Both divisions of the left facial nerve were paralyzed The tongue deviated slightly to the left and the palate to the right, with poor motion on both sides There was thought to be slight weakness of the right anterior tibial muscle and the left upper abdominal reflex was absent

The cerebrospinal fluid contained 210 white blood cells of which 80% were lymphocytes The Pandy test for globulin showed a trace, the test for sugar being negative The blood pressure remained in the vicinity of 110/80

The patient s temperature fell to normal, and there did not seem to be any progression of the paralysis Although the mental state was somewhat clouded, it was felt that the patient was doing reasonably well until 5 00 a m of Sept 27, at which time it was noted that his respirations became quite shallow, without becoming either rapid or irregular, for varying periods of time, and that this hypoventilation was severe enough to cause a definite change in his color Accordingly, oxygen was administered by nasal catheter These periods of hypoventilation alternated irregularly with periods of apparently adequate ventilation until seen by us later that morning

Observation of the patient during the subsequent six hours confirmed the above description of the patient's respiratory status The alternation of periods of hypoventilation with periods of adequate ventilation occupied more prolonged time intervals than were consistent with Cheyne-Stokes breathing. There was no apparent regular periodicity or rhythm to the changes Rather, the period of hypoventilation seemed to last as long as the patient was quiescent and undisturbed

As soon as the patient was aroused, or spontaneously became restless, respiration returned to apparently normal proportions To demonstrate further that the patient had full control of his respiratory muscles, it was but necessary to ask him to breathe forcefully If urged, the patient was capable of performing inspiratory motions that appeared to approach the inspiratory limit of his vital capacity, with vigorous excursion of both his diaphragm and intercostal muscles

Quantitative evidence was obtained concerning the blood gas tensions during these different phases of respiratory activity The nasal oxygen was discontinued at 2 05 p m on Sept 27, a needle was subsequently introduced into the right femoral artery, and three 10-cc samples were obtained The first was drawn at 2 55 p m, after about two minutes of commanded hyperventilation The needle was left in situ and the patient permitted to remain undisturbed with moderate hypoventilation until 3 12 p m, at which time the second sample was drawn The insertion of the syringe into the three-way stopcock at this time disturbed the patient a little and increased ventilation slightly, but nevertheless this sample showed evidence of significant hypoventilation Electrophrenic respiration was then applied on the right side for seven minutes, with suppression of spontaneous respiration At the end of this time the third sample was drawn Table 1 lists the results It is evident that during command ventilation the boy had sufficient voluntary control of his respiratory muscles to accomplish considerable hyperventilation as evidenced by the low pCO and high pO_2 Likewise, stimulation of only one phrenic nerve, presumably active during spontaneous ventilation, was capable of maintaining a normal pO_2 and decreasing the pCO In contrast to this are the low pO and high pCO_2 which were present when the patient was left undisturbed to breathe according to the dictates of his diseased respiratory center

CASE 2 —T R Q, a boy aged 11 years was admitted to the hospital on Aug 24, 1950, with a diagnosis of bulbar poliomyelitis He had been well until the day preceding admission, when he had malaise, vomited three times, and had a rectal temperature of 103 F

TABLE 1 —*Data on Patient A B pO_2 and pCO_2 in Arterial Blood of Patient with Respiratory Center Involvement Due to Bulbar Poliomyelitis*

Type of Breathing	pO_2 Mm Hg	pCO_2 Mm Hg	Serum CO_2 Vol %	pH	O Content Vol %	O_2 Capacity Vol %	Saturation %
1 Forced	115	34	62 03	7 53			
2. Spontaneous	87	50	65 68	7 37	19 03	20 35	92.5
3. Electrophrenic respiration	98	27	65 98	7 65			

Normal values pO₂ 95-100 mm Hg pCO₂ 40 ± 2 mm Hg pH serum 7 40 ± 05 serum CO₂ 55-60 vol per cent (assuming the supine position and barometric pressure of 760 mm Hg)

On admission his rectal temperature was 103 6 F, his pulse was 76, and his respirations were full and regular at 20 per minute The patient was apprehensive, exhibited a nasal, gurgling speech, and was unable to swallow sips of water Additional positive neurological findings were deviation of the tongue to the right, generalized left facial weakness, and slight stiffness of the neck and back Saliva was puddled in the posterior pharynx

On Aug 24, a lumbar puncture showed 113 white blood cells of which 83 were polymorphonuclear On Sept 2, nineteen white blood cells were present, all of which were mononuclear

A pneumotachogram at 10 00 a m on Aug 25, revealed an air flow pattern that deviated little or not at all from the normal and confirmed the impression gained from gross observation of the patient s breathing (Fig 1) At 3 00 p m the air flow pattern became somewhat irregular and shallow and had pauses not usually seen in normal breathing By 7 30 p m the patient s respirations exhibited the irregularity and the series of three or four rapid short breaths that resemble panting which are frequently seen in bulbar poliomyelitis Arterial blood analysis on the morning of Aug 25 revealed a pO_2 of 95 mm Hg and a pCO of 37 mm Hg

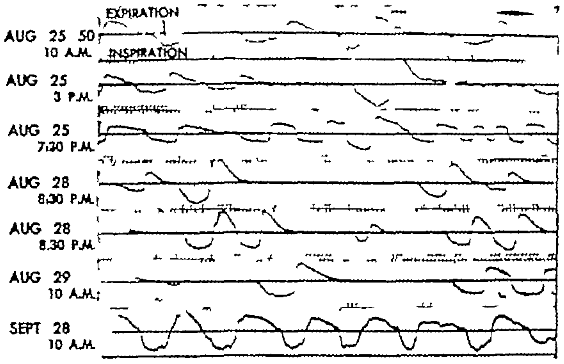

Fig 1 (Case 2) —Pneumotachograms on patient T R Q from Aug 25 to Sept 28 1950 The progress from normal on Aug 25 to abnormal and back to normal again on Sept 28 can be seen

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5 Van Slyke D D and Neill J M Determination of Gases in Blood and Other Solutions by Vacuum Extraction and Manometric Measurement J Biol Chem 61 523 1924

6 Sarnoff et al [3] Sarnoff S J Sarnoff L C and Whittenberger J L Electrophrenic Respiration (EPR) VII The Motor Point of the Phrenic Nerve in Relation to External Stimulation Surg Gynec & Obst. to be published

7 Silverman L. Respiratory Air Flow Characteristics and Their Relation to Certain Lung Conditions Occurring in Industry J Indust Hyg & Toxicol 28 183 1946 Silverman L. and Whittenberger J L. Clinical Pneumotachograph in Methods in Medical Research Chicago The Year Book Publishers, Inc 1950 vol 2, p 104 Instantaneous Air Flow Measurements ibid pp 215 218

On the evening of Aug 26, because the irregularities persisted, electrophrenic respiration was tested on this patient in anticipation of more serious difficulty It was found to function well both on the left and right phrenic nerves On this and subsequent occasions the application of electrophrenic respiration promptly suppressed all spontaneous respiration and was accompanied with a diminution or cessation of the patient s restlessness

Although the irregular respirations persisted and the patient was frequently restless and disoriented, he was not thought to be hypoventilating except for brief periods At these times verbal stimulation could re-establish apparently adequate ventilation, until 10 00 p m on Aug. 27, at which time his respiration became shallow and fell to between 6 to 8 per minute Electrophrenic respiration was applied by external stimulation and maintained by means of the bedside clamp until 2 30 p m on Aug 28, at which time, although still breathing irregularly, he was responsive and again able to maintain apparently more adequate ventilation than previously

The arterial blood gas tensions obtained on the afternoon of Aug 28 are shown in Table 2, and indicate the subnormal ventilation of this patient during spontaneous breathing Soon afterward respiratory minute volumes were obtained several times while the patient was breathing room air and again while breathing 100% oxygen (Fig 2) At 8 30 p m the pneumotachograms were still such as to indicate derangement of the respiratory center (Fig 2)

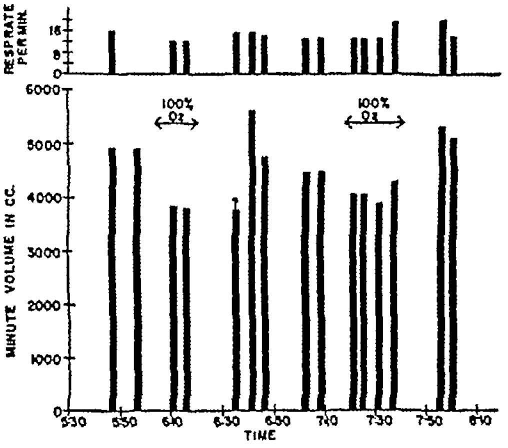

Fig 2 (Case 2)—Respiratory rates and minute volumes of patient T R Q while breathing room air and 100% oxygen. The decreased ventilation that occurred during the administration of 100% oxygen can be seen. The question mark over the value at 6 34 p m indicates what was thought to be a leak occurring during that collection period

On Aug 29, the arterial pO_2 was 96 mm Hg and the pCO_2 was 37 mm Hg It should be mentioned, however, that through an oversight the blood sample was drawn promptly after the insertion of the needle into the femoral artery, before the patient had a chance to quiet down from the reaction engendered by the needle puncture

Again at 1 00 a m on Aug 30, respirations became shallow and fell to between 0 and 4 per minute, and the patient did not react to either verbal or physical stimuli Electrophrenic respiration was again promptly applied and maintained until 8 00 a m, at which time he was again able to maintain apparently adequate ventilation Since it was felt that a catastrophe had been only narrowly avoided, the implantation of a phrenic electrode was considered so as to maintain adequate ventilation until the patient was clearly over his respiratory defect The use of the tank respirator was not felt to be indicated in this case At this point, however, the patient began to improve noticeably, and further respiratory support was not required The patient was discharged on Sept 12, and a follow up pneumotachogram on Sept 28, 1950, showed a normal respiratory air flow pattern

COMMENT

It becomes likely, in view of the data obtained on these patients, that a third type should be more clearly recognized in the classification of central respiratory defects in bulbar poliomyelitis That is, in addition to irregularities of rhythm and incoordination of muscular effort, one must postulate that an altered sensitivity to CO_2 may occur presumably as a result of involvement of the respiratory center Sedation had not been administered to these patients Patient A B (Case 1) presented the bulbar hypoventilation syndrome in relatively "pure culture," that is, without gross irregularity of rate and depth and without incoordination of the respiratory muscles Patient T R Q (Case 2), however, exhibited what we anticipate may prove much more common, namely, gross irregularity of rate and depth (Fig 1) as well as lowered sensitivity of the respiratory center to CO_2 It might well be that in other patients with bulbar involvement who show some irregularity and incoordination, this factor is also present to a significant extent, but the inadequate ventilation is attributed to the irregularity of the respiratory attempts rather than a lessening of the central respiratory drive, the diminished sensitivity of the respiratory center being masked by the more obvious motor dyskinesias

The management of this situation is simple if the patient responds to verbal or gentle mechanical stimuli with increased ventilatory efforts It is only necessary to watch him carefully, reminding him to breathe adequately when his center "forgets" to do so If he does not respond adequately to such commands, he must, of course, receive some form of artificial respiration Patient A B (Case 1) continued to lapse into his typical periods of hypoventilation with diminishing intensity for the subsequent 72 hours, the nurse in attendance reminding him to breathe each time After that period, he appeared to breathe adequately An electrophrenic respirator was kept at the bedside in order to provide for the possible emergency arising out of failure to respond adequately should that have occurred

Patient T R. Q (Case 2), on the other hand, failed to respond adequately on two occasions, and artificial respiration was clearly indicated The amount of fatigue induced in the patient by continued response to verbal commands (not to mention fatigue of the nursing personnel) must be estimated and weighed appropriately in any decision involving the question of whether or not to provide artificial respiratory support instead of verbal reminders In retrospect, one cannot help but wonder if early implantation of the phrenic electrode and steadily maintained electrophrenic respiration during the critical period would not have conferred a more reassuring margin of safety in the management of this case The concensus of the majority associated with patient T R. Q is that if presented with the same or a similar situation early electrode implantation is indicated On the other hand, if patient A B (Case 1) had had an implantation it would have been superfluous since he managed quite well without it

The spontaneous and readily induced fluctuations of the adequacy of respiration make it necessary to observe two precautions in the interpretation of blood gas data from these patients

1 The blood must be drawn in such a way as to leave the patient undisturbed, since any stimulus sufficient to irritate the patient may produce an increase in ventilation of sufficient magnitude to produce normal

blood gas values It seemed to us that the best technique was to connect a three-way stopcock to the needle after it is inserted, connect the syringe, and flush it with saline After at least five minutes, or when it is apparent that the respiratory disturbance resulting from the arterial puncture has abated, the handle of the stopcock is gently turned so as to empty a few drops of blood out the side of the three-way stopcock and then permit the blood to flow into the syringe

2 There are spontaneous fluctuations in the adequacy of ventilation from hour to hour with no apparent relation to external stimulation Data on blood obtained during the periods of more adequate ventilation would confer a false sense of security in the clinical management of the patient

In view of these factors, it is important to realize that the obtaining of blood values indicative of hypoventilation is diagnostic of the hypoventilation syndrome *in the presence of* bulbar poliomyelitis but that *normal* blood values do not provide assurance of a normal respiratory center drive at times other than at that moment when the blood was drawn The fact that normal values (Table 2) were obtained on the morning of the day (Aug 29, 1950) when the near catastrophe occurred in patient T R Q, reveals the false sense of security that normal values can produce under these circumstances In this case, the Aug 29 blood sample was obtained immediately after the arterial puncture without regard for precaution 1 mentioned above

TABLE 2—*Data on Patient T R Q pO and pCO_2 in Arterial Blood of Patient with Respiratory Center Involvement Due to Bulbar Poliomyelitis*

Date 1950	Sample	pO_2 Mm Hg	pCO_2 Mm Hg
Aug 28	Spontanous respiration *	90 5	48
	Forced respiration †	105 5	38
Aug 29	Spontaneous respiration	96 0	37

* Drawn five minutes after arterial puncture

† Drawn after two minutes of forced respiration which immediately followed the drawing of sample 1

Marshall and Rosenfeld[8] demonstrated that when the sensitivity of the respiratory center is depressed by barbiturates, the remaining activity of the center results largely from the hypoxic stimuli arising in the carotid and aortic bodies For, by giving oxygen under these circumstances and thus removing the hypoxic stimulus, the already subnormal respiratory minute volume falls even further The result is that the pCO_2 in the arterial blood, already at high levels, rises still further and may produce a secondary deepening of the respiratory center narcosis This produces a state of affairs in which, even when the oxygen is stopped, spontaneous respiration may not be resumed since, at the level of carbon dioxide present, the center may then be refractory even to hypoxic stimuli

It has been thought that the administration of carbon dioxide with oxygen under these circumstances would stimulate the lagging respiratory center to more adequate activity We feel that there are two palpable objections to such a maneuver First, the continued administration of carbon dioxide must of necessity produce a significant deviation from normal of the acid-base balance of the organism Second, the administration of carbon dioxide to a patient with a slightly or moderately elevated arterial pCO_2 might well increase ventilation However, if the patient's arterial pCO_2 already is elevated to the point where a further elevation will produce carbon dioxide narcosis and respiratory depression, it is apparent that the administration of carbon dioxide to such a patient is unwise[9]

Since the urgent demands of the critical situation sometimes preclude precise analysis before initiating therapy, we feel that inhaled carbon dioxide under these circumstances might be hazardous

Clinicians and physiologists are becoming increasingly aware that the abrupt administration of oxygen to an emphysema patient whose respiratory center has in some way become adapted to a high level of carbon dioxide (lowered sensitivity) can be hazardous[10]

There are two practical implications of the above-presented data First, there is the possibility that the respiratory center attacked by the poliomyelitis virus is depressed and that it may depend to a certain extent on the hypoxic stimulus for the level of its respiratory activity as described above Since the care of such patients frequently includes the administration of oxygen, it is suggested that the precise determination of its effect on ventilation and arterial carbon dioxide levels is highly desirable Should the administration of oxygen be accompanied with a decrease in ventilation, some form of artificial respiration is clearly indicated

Secondly, while there is a reluctance on the part of a great many persons to treat the patient with bulbar poliomyelitis in the tank respirator, it is obvious that under these conditions some kind of respiratory support is required As indicated by the sequence in the case of patient T R Q, the electrophrenic respirator may be of help under these circumstances, either alone or as a stopgap until the patient can be acclimatized to the tank respirator Although making a prognosis of any kind in poliomyelitis is hazardous, at 1 30 a m on Aug 30, when patient T R Q was breathing at a rate of 0 to 4 respirations per minute and it was no longer possible to arouse the patient by verbal stimuli, it was clear that some sort of respiratory support was required if a catastrophe was to be avoided In this episode, as in others of its kind, the brevity of the period of electrophrenic respiration required to re-establish a relatively normal sensitivity of the respiratory center was of considerable interest One other patient, reported previously,[3] also responded in this manner after eight hours of electrophrenic respiration It may be that the period of induced adequate ventilation breaks some vicious arc The latter may be thought to consist of a series of events which impose a high pCO_2 and low pO_2 on the respiratory center, thus impairing its function and in turn producing an even higher pCO_2 and lower pO_2 to the point where carbon dioxide nar-

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8 Marshall E K Jr and Rosenfeld M Depression of Respiration by Oxygen J Pharmacol. & Exper Therap 57 437 1936

9 Whittenberger J L. and Sarnoff S J Symposium on Specific Methods of Treatment the Treatment of Respiratory Failure M Clin North America 34 1335 1950

10 Marshall and Rosenfeld[8] Comroe J H, Jr, Bahnson E R. and Coates E. O Jr Mental Changes Occurring in Chronically Anoxemic Patients During Oxygen Therapy J A M A 143 1044 1950 Grandpierre R. Franck C and Lemaire R L action paradoxale de l oxygène J physiol 42 5, 1950

cosis of the center occurs The period of induced adequate ventilation reverses this pattern and partially restores the sensitivity of the respiratory center The patient can then maintain himself until, because of some unknown factor, the sequence begins again This line of reasoning will be recognized as highly speculative, since it may well be that an increased supply of oxygen to the medulla during adequate ventilation is responsible for restoring its sensitivity It is, however, clear that the type of poliomyelitis patient described above may exhibit a severely diminished ventilation, which, if supported by artificial respiration for brief periods, may be a rapidly reversible state

SUMMARY AND CONCLUSIONS

Diminished respiratory center activity, either with or without gross respiratory irregularity and incoordination, may occur in bulbar poliomyelitis It is suggested that this results from an altered sensitivity of the respiratory center to carbon dioxide consequent to medullary involvement in this disease

Verbal artificial respiration can be effectively administered under these circumstances if the patient is responsive and is observed continuously by competent personnel, and if it is not required for too prolonged a period

This type of respiratory defect may occur more frequently than supposed, but may be masked by the more obvious abnormalities of breathing in bulbar poliomyelitis

The possible hazards of oxygen administration under these conditions have been mentioned These potenial hazards would, however, be readily overcome if any significant diminution of spontaneous ventilation is reversed by some means of artificial respiration

Electrophrenic respiration may be of help under circumstances wherein spontaneous respiration is inadequate or becomes so following the administration of oxygen It is obvious that at least one phrenic nerve must be uninvolved by the disease if electrophrenic respiration is to be used

55 Shattuck Street

INTRODUCTION OF BLOOD INTO THE PERITONEAL CAVITY

AN EXPERIMENTAL STUDY

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Intraperitoneal hemorrhage is frequently encountered on an active obstetric and gynecologic service Therefore, correlation of quantity of free blood with resulting symptoms and with its fate represents information of considerable value to the clinician For this reason whole blood and other similar materials varying in amounts were introduced at varying rates into the human peritoneal cavity

SUBJECTS

Sixteen women about to undergo laparotomy formed the subjects of this study Twelve were puerperal and awaiting tubal sterilization Four had noninvasive, or intraepithelial, cervical carcinoma Preoperative patients were chosen in order to afford opportunity for direct inspection during the subsequent operation In addition, the protocols of three patients, each with accidental and massive intra-abdominal hemorrhage, were included Essential data on these 19 patients are presented in the accompanying Table

METHOD

Injections were made under local anesthesia through a 16-gauge needle inserted 2 to 4 cm below the umbilicus and usually in the mid-line Sometimes they were made in either the right or the left lower quadrant Generally, whole blood was withdrawn from the patient's antecubital vein into a 20-cc syringe, the barrel of which had been previously lubricated with mineral oil or melted petroleum jelly The use of multiple syringes and two operators made it possible to inject as much as 500 cc of whole blood at one time Toward the end of the study, isotonic saline, plasma, and washed red blood cells were injected in a similar manner in some patients The rate of injection varied with each patient and appeared to be a factor in the causation of various symptoms Temperature and pulse rate were recorded carefully before injection, and afterward at hourly intervals for at least 12

Essential Data on Patients Included in Study

Patient	Age (Yr)	Gravida	Para	Race	Preoperative Condition
C S	40	6	6	W	3 days puerperal
E M. H	31	8	8	N	13 days puerperal
H Y	29	7	7	W	4 days puerperal
M L R	26	6	5	W	5 days puerperal
B P	41	4	4	N	9 days puerperal
V M	31	10	8	N	11 days puerperal
O M H	38	10	8	N	7 days puerperal
A P	26	7	6	N	4 days puerperal
W A	25	6	6	N	50 days puerperal
M E W	39	9	9	N	7 days puerperal
S M	48	15	14	W	4 days puerperal
E T	34	8	7	N	1 day puerperal
A. A	22	4	4	N	Intraepithelial carcinoma of cervix
B S	27	5	5	N	Intraepithelial carcinoma of cervix
N T	20	6	5	N	Intraepithelial carcinoma of cervix
L R	21	2	2	N	Intraepithelial carcinoma of cervix
M F B	23	1	0	N	Hemorrhage omental vessel
C L	22	3	2	N	Ruptured ectopic pregnancy
H W	27	2	2	W	Ruptured spleen

From the Department of Obstetrics and Gynecology of Parkland Hospital and the Department of Obstetrics and Gynecology of the Southwestern Medical School of the University of Texas Dallas Texas hours White blood cell counts were made before injection, a few hours after injection, and on the following day Blood was injected prior to operation so that we could know for certain that it was in the peritoneal cavity and could study its fate, as well as possible peritoneal reaction In this series, in each of the 16 patients with a planned injection, the material was found within the peritoneal cavity In a patient not included in the series, 330 cc of whole blood supposedly injected intraperitoneally was totally lost The blood was not found in the peritoneal cavity and did not appear in the stools, and there was no parietal hematoma or any soft tissue mass anywhere

RESULTS

Naturally there were no definite end points, and evaluation of the experiments depended on the subjective observations and opinions of the observer and on the pain threshold and vocal response of the patient

Following injection of less than 300 cc of blood, the patient usually complained of fullness in the lower abdomen, and a desire to pass gas or belch Some patients complained of uterine cramping or said the afterpains were intensified Following injection of 300 to 550 cc of blood, moderate to severe pain immediately ensued, gradually diminished, and disappeared after 15 to 30 minutes However, if additional blood was injected, the pain recurred Even when patients were unaware that additional fluid was injected, pain and discomfort were produced This is one of the important findings of the study Moreover, with each succeeding injection, symptoms could be evoked with decreasing amounts of fluid and tended to persist for increasing periods of time Pain invariably disappeared within two hours after conclusion of injection However, a few patients, when questioned closely, admitted a feeling of fullness in the lower abdomen at this time Tenderness in response to deep palpation increased temporarily, but disappeared by the following morning This was true even in patients who at operation were discovered to have as much as 500 cc of bloody abdominal fluid

Most patients were operated on within 24 hours of the initial injections Approximately four-fifths of the injected blood was found remaining in the peritoneal cavity in each one It was always liquid, and clots were seldom found in the patients in whom whole blood had been injected

Five of the 16 patients received injections of materials other than whole blood Five hundred cubic centimeters of isotonic saline solution was injected into one patient The injection was begun rapidly, but, as with some of the other patients, was interrupted once or twice during its course Pain appeared after about 200 cc was injected Subsequently, the pain could be reproduced with diminishing amounts of saline When the abdomen was opened, there was merely a slight increase in the amount of intraperitoneal fluid In other words, practically all of the saline was absorbed during 24 hours This is entirely in accord with the experiments of Blackfan and Maxcy [1] reported in 1918

Plasma was absorbed rapidly, but not so rapidly as isotonic saline solution We employed Red Cross-prepared plasma In one patient receiving 100 cc, pain developed, and at operation some peritoneal reaction was exhibited A second patient received 475 cc of plasma, and was found to have approximately 75 cc of brownish fluid in the peritoneal cavity the next day It seemed to the observer that there was proportionately more peritoneal reaction with plasma than with similar quantities of blood in other patients However, this cannot be considered a valid observation since it was made on only one patient

Two patients received red blood cells washed and resuspended in Ringer's lactate solution In the patient receiving 260 cc, more than 100 cc of bloody fluid was found at operation In the patient receiving 520 cc, more than 300 cc was found at operation In other words, it would seem that because of the presence of the erythrocytes, rate of absorption of the Ringer's lactate solution was not so rapid as it might have been

Pain could be produced with each of these materials as well as with whole blood In other words, it would seem that the intensity of the pain reaction, in addition to depending on the pain threshold of the patient, is roughly proportional to the quantity of injected material, rather than dependent on the composition of injected material Experimental work by Capps and Coleman [2] in the human being suggests that localized pain results either from pressure on the parietal peritoneum with a stretching of the nerve endings in the subserosal layers, or from the tearing of the serosal cells with direct irritation to the subserosal nerve endings Also, Capps and Coleman believe that abdominal rigidity is the result of reflex action from the irritated parietal peritoneum, or of an inflamed viscus in contact with parietal peritoneum

Temperature elevations in excess of one degree Fahrenheit were not noted Following injection of a large amount of fluid, a mild leucocytosis, sometimes to 19,000 cells per cubic millimeter, resulted within four to six hours but disappeared by the next day At operation, the entire visible portion of the peritoneal surface was slightly injected, but no marked erythema or fibrin response was seen No patient suffered any abnormal after-effect because of the injection

REPORT OF TYPICAL PATIENTS

M E W was seven days postpartum After injection of 200 cc of whole blood she complained of epigastric pain She was placed in Trendelenburg position, but suffered no shoulder pain After her restoration to horizontal recumbency, an additional 60 cc of blood was injected, the epigastric pain recurred but was practically gone at the end of an hour At this time the patient complained of gas pains and stated that she felt better after passing gas Following injection, no pulse change was noted and the temperature rise was insignificant At the time of injection the white blood count was 12 800 per cubic millimeter It was 15 600 four hours after injection and 9 200 twelve hours later, or 16 hours postinjection During the night there was no difficulty, and at operation the next morning more than 200 cc of liquid blood was found in the peritoneal cavity

S M was four days postpartum Red blood cells removed from 500 cc of blood were washed and suspended in an equivalent amount of Ringer s lactate solution Two hundred and fifty cubic centimeters of this washed blood cell suspension was injected during the course of 15 minutes The patient complained of a feeling of fullness and a desire to defecate These symptoms decreased and after 15 minutes the injection was resumed with an additional 120 cc The discomfort reappeared, and actual pain was experienced for the first time Nevertheless, when she was placed with the head down in moderate Trendelenburg position and remained there for five minutes, there were no symptoms of diaphragmatic irritation After she had resumed the horizontal position, the injection was continued with another 75 cc At this time marked discomfort with moderate to severe abdominal pain appeared In other words, she had now received 445 cc over a period of 40 minutes Twenty minutes later another 55 cc of washed cells produced definite pain, which disappeared during the next 30 minutes At this time the symptoms were reproduced with 25 cc Not only were they reproduced, but the patient now had really severe pain (chiefly in the epigastrium), fulness, and tenderness on gentle palpation One and one half hours after conclusion of the injection the pain had decreased so that there was only a slight tenderness in response to palpation and a minimal subjective sensation of fulness Two hours after conclusion of the experiment the temperature was 98 6 F , the pulse, 80 beats per minute, and the white blood count, 19,000 per cubic millimeter Three hours after conclusion of the experiment the patient had no complaints and was out of bed and walking around the ward At this time the white blood count was 12,700, the temperature was 99 4 F , and the pulse varied between 80 and 90 beats per minute The following day more than 300 cc of bloody fluid was found in the peritoneal cavity and the peritoneum was slightly injected All conversation with the patient was through the medium of an interpreter, since the patient spoke no English It was felt at the time that suggestion of ideas, from physician to patient, was minimized

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[1] Blackfan K D and Maxcy C F Intraperitoneal Injection of Saline Solution Am J Dis Child 15 19 28 (Jan) 1918

[2] Capps J A and Coleman G H Localization of the Pain Sense in the Parietal and Diaphragmatic Peritoneum Arch Int Med 30 778 789 (Dec) 1922

The following report is typical of a patient with accidental hemorrhage

C L , age 22, was in shock when first seen At this time she complained of no pain The abdomen was soft but there was moderate lower abdominal tenderness on deep palpation She was found to have a ruptured right interstitial tubal pregnancy and there was nearly 3 L of fluid blood with a few clots in the peritoneal cavity

Apparently the general dulling of sensations of the patient with shock makes the symptoms and signs of abdominal pain and palpatory tenderness totally unreliable as a means of ascertaining the presence or absence of blood in the peritoneal cavity Two other patients with massive accidental intraperitoneal hemorrhage exhibited similar symptoms, namely, absence of pain response and minimal tenderness on palpation Nevertheless, one of them had 1,200 cc of liquid blood in the peritoneal cavity, and the other, about 1,500 cc Many other patients with subsequently proved massive hemorrhage were observed All presented similar symptoms and signs, and their inclusion in this study would be unduly repetitious

COMMENT

Whole blood injected into the peritoneal cavity of experimental animals is harmless and produces almost no reaction [3] Single injections caused no adhesions or evidence of peritoneal irritation Massive coagulation did not occur, but there was slight microcoagulation On the other hand, when multiple injections over a period of time were used in the rabbit,[4] hyperplasia of the connective tissue cells of the omentum and increased monocytic cell response of the peritoneal fluid were produced

Frog erythrocytes injected into the peritoneal cavity of the white mouse [5] were absorbed intact, principally through the diaphragmatic lymphatics, although all of the peritoneal lymphatics are probably concerned with absorption Hahn and others [6] confirmed lymphatic absorption in the dog, using radioactivated iron incorporated in the erythrocytes Moreover, the red cells passed into the lymph spaces, vessels, and nodes without suffering injury or phagocytosis The absorption of red blood cells is augmented by acceleration of the rate and depth of respiration and by increased intra-abdominal pressure [7] However, the rate of absorption [6] varied in the dog from 20 to 100% in 24 hours

Cunningham [8] observed that 10% aqueous dextrose solution was absorbed primarily by way of the blood capillaries of the rat and postulated that this must be the route of absorption of the fluid portion of peritoneally injected blood

The therapeutic injection of blood into the human peritoneal cavity was performed as early as 1875 by Ponfick [9] Since then, many have employed the method in acute and chronic primary and secondary anemia More recently, Cole and Montgomery [10] injected 237 transfusions into the peritoneal cavities of 117 children On the other hand, no study was found directly relating to the subjective reactions produced by the experimental introduction of blood into the human peritoneal cavity

SUMMARY AND CONCLUSIONS

Sixteen women about to undergo laparotomy received injections of whole blood (11), saline (one), plasma (two) and washed red blood cells resuspended in Ringer's lactate solution (two) The records of three additional patients with accidental hemorrhage in excess of 1,200 cc were included in the study in order to indicate the effect of massive amounts of intraperitoneal blood

After injection of whole blood or resuspended erythrocytes, temperature elevation did not exceed one degree Fahrenheit There was usually a transient leucocytic response, but in no instance more than 19,000 cells per cubic millimeter By the day following injection there was usually a generalized peritoneal redness About four-fifths of the total quantity of injected blood remained in a liquid state in the abdominal cavity Clotting was invariably minimal

From work done by others, it is known that red blood cells are absorbed chiefly by the lymphatics of the diaphragm, while the fluid portion of the injected blood enters the circulation by way of the blood capillaries

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3 (*a*) Dorigo A Richerche sperimentali sull emoperitoneo Policlinico (sez. chir) **47** 15-30 (Jan) 1940 (*b*) Siperstein D M and Sansby J M Intraperitoneal Transfusion with Citrated Blood Am J Dis Child **25** 107 129 (Feb) 1923

4 Sarason E L Cellular Reaction to Intraperitoneally Injected Blood Yale J Biol & Med **12** 269 276 (Jan) 1940

5 Allen L *Peritoneal Stomata Anat Rec* **67** 89 103 (Dec 25) 1936

6 Hahn P F Miller L L. Robscheit Robbins F S Bale W F and Whipple G H Peritoneal Absorption J Exper Med **80** 77-82 (Aug) 1944

7 Florey H W and Witts L. J Absorption of Blood from the Peritoneal Cavity Lancet **1**: 1323 1325 (June 30) 1928

8 Cunningham R. S Studies on Absorption from Serous Cavities Am J Physiol **82** 59-62 (Sept) 1927

9 Ponfick Experimentelle Beiträge zur Lehre von der Transfusion Virchows Arch f path Anat **62** 273-335 (Jan) 1875

10 Cole W C C and Montgomery J C Intraperitoneal Blood Transfusion Report of 237 Transfusions on 117 Patients in Private Practice Am J Dis Child **37** 497 510 (March) 1929

Following injections of less than 300 cc of material, patients of this series complained of fullness in the abdominal cavity and a desire to belch and to pass gas Such patients seldom experience true pain When more than 300 cc was injected, moderate to severe abdominal pain, depending on the emotional threshold of the patient, appeared at once, but in every instance was gone within two hours On the other hand, tenderness in response to deep palpation sometimes persisted after this period of time After the initial injection, it was possible to bring back the abdominal pain by small additional amounts of injected material Translating this into clinical terms, it may be stated that in patients with suspected intra-abdominal hemorrhage, continuance of the complaint of fullness and pain indicates continuing or repeated hemorrhage The pain response of the patient depends on her emotional threshold, and apparently on the quantity and not the character of the injected material In three patients with massive accidental hemorrhage, the complaint of pain or fullness was conspicuously absent. Apparently the shock resulting from loss of quantities of blood into the peritoneal cavity dulls the sensorium, and therefore abolishes the reaction of pain

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INACCURACY OF FOUR CHEMICAL PROCEDURES AS DIAGNOSTIC TESTS FOR CANCER

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and
Richard J Winzler, Ph D , Los Angeles

During the past several years, interest in the chemical serodiagnosis of cancer has been revived by the introduction of several new procedures Among these have been the methylene blue reduction time,[1] the heat turbidity index,[2] the Huggins iodoacetic acid index,[3] and the level of the mucoprotein fraction in blood [4] Although none of the originators of these tests claimed them to be specific for the diagnosis of malignant disease, the suggestion has been made that some of these tests would be a definite aid in cancer diagnosis The early evaluations of some of these tests indicated that they were fairly accurate More recent studies on two of these procedures, however, have been rather discouraging [5] It has been suggested that a battery of tests might prove to be more accurate than any one of its component parts It has been the purpose of this study to compare the accuracy of the above tests run simultaneously on the same patients and to determine whether a battery of the four tests would give greater accuracy than any single test

All patients were ambulatory and were referred for determination of suspected cancer or for therapy of an already diagnosed tumor It was felt that such a series would provide the most rigid indication of the value of the tests from the point of view of practical cancer diagnosis Both sexes and all age groups are represented In the majority of cases, final diagnosis was made by biopsy

Of 274 cases studied, there were 149 in which the diagnosis of cancer was ruled out, 77 in which the diagnosis of cancer was well established, and 48 in which there was doubt as to whether or not malignant disease was present at the time of the test Data for the latter group are not included in this report Many types of cancer were represented, including carcinoma of the breast, cervix, larynx, prostate, uterus, rectum and tongue, and malignant melanoma, basal cell carcinoma, and lymphosarcoma The determinations were made by persons having no knowledge of the case histories

METHODS

The blood samples were centrifuged within four hours of collection and the serum or plasma kept at refrigerator temperature (about 4 C) until analyzed The iodoacetic acid test was that of Huggins and his coworkers,[6] who used serum, the test being run within one week after the specimen was obtained The end-points were read by the wire-loop technique and, to minimize variations in their reading, all tests were read by the same person Total serum protein was determined by a biuret method [7]

The methylene blue reduction time was determined by the method of Black [1b] (with use of 0 15% methylene blue, and the addition of caprylic alcohol to decrease foaming [8]) The test was run on plasma within 24 hr after obtaining the specimen The heat turbidity index obtained was that of Black and his colleagues [2] and was run on plasma within 24 hr

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From the Bio-Science Laboratories (Dr Henry and Dr Berkman) and the Department of Biochemistry University of Southern California School of Medicine (Mr Little and Dr Winzler)

With few exceptions all blood samples were obtained from three sources the tumor board clinic of the Hollywood Presbyterian Hospital Dr S Perzik Beverly Hills Calif and Dr S Baker Los Angeles

[1] (*a*) Savignac R J Gant J C and Sizer I W *Reducing* Properties of Serum from Malignant and Non Malignant Patients and from Normal Individuals in Research Conference on Cancer Conference of Papers and Discussions Presented at the *Meeting of the Section on* Chemistry of the American Association for the Advancement of Science American Association for the Advancement of Science 1944 *pp* 241 252 (*b*) Black M M Changes in the Reducing Power of Serum or Plasma of Patients with Malignant Neoplastic Disease Cancer Res **7**: 321 1947

[2] Black M M Kleiner I S and Bolker H Changes in the Heat Coagulation of Plasma for Cancer Patients Cancer Res **8** 79 1948

[3] Huggins C Miller G M , and Jensen E V Thermal Coagulation of Serum Proteins II Deficient Coagulation in Cancer and the Iodoacetate Index Cancer Res **9** 177 1949

[4] Winzler R J and Smyth I M Studies on the Mucoproteins of Human Plasma Plasma Mucoprotein Levels in Cancer Patients J Clin Invest **27**: 619 1948

[5] (*a*) Homburger F Evaluation of Diagnostic Tests for Cancer Methodology of Evaluation and Review of Suggested Diagnostic Procedures Cancer **3** 143 1950 (*b*) Homburger F Pfeiffer P H, Page O Rizzone G P and Benotti J Evaluation and Diagnostic Tests for Cancer Inhibition of Thermal Coagulation of Serum by Iodoacetic Acid (The Huggins-Miller Jensen Test) ibid **3** 15 1950 (*c*) Bodansky O and McInnes G F Thermal Coagulation of Serum Proteins in Cancer in the Post Operative Phase of Surgery and in the Administration of Adrenocorticotropic Hormone ibid **3** 1 1950

The mucoprotein in serum or plasma was determined by the method of Winzler and others [9] within two weeks after the specimen was obtained, a period over which this fraction is stable

RESULTS

In the chart are bar graphs showing the distribution of results of the four tests for both groups, the values for individuals with cancer being shown by solid bars, and those for cancer-free patients, by open bars No attempt was made in this evaluation to separate the cancer-free but diseased from normal patients, since the primary concern of this project was to evaluate the procedures as diagnostic tests for cancer Actually, owing to the nature of the sources of test cases, very few "normal" cases were encountered As seen from the bar graphs, there is a great spread with considerable overlapping for both groups in each test, although there is an unmistakable tendency for a shift when the group with malignant disease is taken as a whole

The arbitrary values chosen to divide positive tests from negative ones were taken or estimated from the literature and were as follows an iodoacetic acid index less than 9 0 was positive, and greater than 9 0 was negative, a methylene blue reduction time of more than 10 min was positive, and of 10 min or less was negative, a heat turbidity index greater than 96 was positive, less than 96 was negative, a mucoprotein value greater than 4 5 was positive, less than 4 5 was negative

Two methods were used to evaluate the accuracy of the tests and of their combinations The first of these, shown in column six, is the "over-all per cent accuracy" calculated by averaging the per cent accuracy of the two groups, those with cancer and those without cancer The second method for expression of the data given in column seven is the Youden index or "J" value for the tests,[10] this value ranging from zero when there is no correlation of the test values with disease up to a value of unity when perfect correlation exists This index has been recently criticized [11] on the basis that it does not take into account the "critical value" chosen to divide positive tests from negative, and that different "J" values can be obtained merely by changing the "critical value" "J" values, therefore, must be regarded as valid only for the "critical value" used in the test—i e, the "critical value" chosen is considered part of the test. Inspection of the bar distribution graphs in the chart indicates that any increase in "J" values achieved by choosing different "critical values" could be only slight.

In the first four rows of Table 1 are given the results of the individual tests Since no sharp lines of demarcation between positive and negative tests could be drawn for these data it was believed advisable to establish "doubtful" zones for each test around the arbitrary points dividing positive from negative The zones arbitrarily chosen for these tests were as follows iodoacetic acid index, 8 6 to 9 4, methylene blue reduction time, 9 75 to 10 5 min, heat turbidity index, 90 to 100, and mucoprotein, 4 1 to 4 9 mg per 100 cc The correlation values for the four tests in which all values falling into these "doubtful" zones were discarded are given in rows five to eight, inclusive, of Table 1

In Table 2 are given the statistics on the four tests used as a battery In the first row are the results obtained when the battery is considered positive if at least one of the four tests is positive Thus, out of 70 patients with cancer, in 67 at least one of the four tests was positive, of 117 who were cancer-free, however, in 24 not even one test was positive Likewise, in the second row, the battery is positive if two or more are positive, and, in the last row, if any three of the four are positive Values falling in the "doubtful" zones were not discarded in these calculations

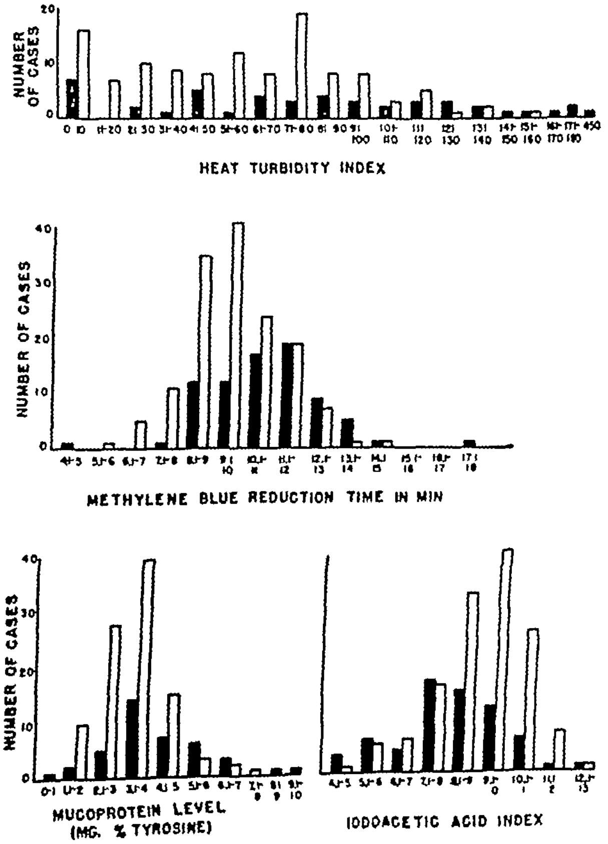

Chart showing distribution of test results among patients with cancer (solid bars) and without cancer (open bars)

The over-all per cent accuracy of the individual tests ranged from 61 to 69, and the "J" values lay between 0 2 and 0 4 The variation in the corresponding "J" values was not found to be statistically significant As was expected, the "J" values tended to show an increase with the introduction of the "doubtful" zones although the individual increases were not statistically significant If the battery of four tests was considered positive when one individual test or more was positive, it is seen that there

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6 Huggins C. Miller G M and Jensen E V Simplified Procedure for Serum Coagulation Test Mimeo 1949

7 Weichselbaum T E An Accurate and Rapid Method for the Determination of Proteins in Small Amounts of Blood Serum and Plasma Am J Clin Path 16 Tech Sec (10) 40 1946

8 Stettner M M Baron H. Lowenstein B E., Greenwald A. E., Mersheimer W L and Kleiner I S A Clinical Evaluation of the Black Kleiner Bolker Blood Test for Malignant Disease J Lab & Clin Med 35: 136 1950

9 Winzler R. J Devor A. W Mehl J W and Smyth I M Studies on the Mucoproteins of Human Plasma Determination and Isolation J Clin. Invest. 27: 609 1948

10 Youden W J Index for Rating Diagnostic Tests Cancer 3: 32, 1950

11 Greenhouse S W Cornfield J and Homburger, F The Youden Index Letters to the Editor Cancer 3: 1097 1950

is a low percentage of false negatives but a high percentage of false positives If the battery was considered positive when three of the four tests were positive the situation was reversed, namely, a high percentage of false negatives and a low percentage of false positives When the battery was considered positive with a minimum of two tests positive, a balance between these two extremes was achieved, giving a higher over-all per cent accuracy and a significantly higher "J" value (significant by *t* test)[10] This "J" value is not, however, significantly higher than that of any of the individual tests employing the "doubtful" zones

It is possible that such chemical tests for cancer might be more accurate for one type than for another The only type of cancer sufficiently well represented in this series to warrant such an evaluation was that of carcinoma of the breast (20 cases) The iodoacetic acid index and the methylene blue reduction time were positive in 72 and 65% of the cases, respectively, in contrast to 69 and 66% for all types of cancer

TABLE 1—*Analysis of Results of the Four Chemical Diagnostic Tests for Cancer Given Individually*

	Patients with Cancer			Patients Without Cancer				
Type of Test	Total No	No Positive	Correctly Diagnosed, %	Total No	No Negative	Correctly Diagnosed %	Weighted Over All Accuracy %	"J" Values
Iodoacetic acid index	65	45	69	130	75	55	62	0.24 ± 0.14 *
Methylene blue	77	51	66	144	93	65	65	0.31 ± 0.13
Heat turbidity	46	16	35	117	106	91	63	0.26 ± 0.15
Mucoprotein	41	14	34	99	86	87	61	0.21 ± 0.16
Values with Omission of Doubtful Zones								
Iodoacetic acid index	55	42	76	101	54	53	65	0.30 ± 0.15
Methylene blue	60	42	70	111	76	69	69	0.35 ± 0.17
Heat turbidity	42	16	36	112	101	90	63	0.26 ± 0.16
Mucoprotein	37	12	32	86	79	92	62	0.24 ± 0.24

* Twice the standard error and therefore the range giving 95% confidence

TABLE 2—*Analysis of Results of Battery of Four Chemical Diagnostic Tests for Cancer*

	Patients with Cancer			Patients Without Cancer				
Results of Test	Total No	No Positive	Correctly Diagnosed %	Total No	No Negative	Correctly Diagnosed %	Weighted Over All Accuracy %	"J" Values
1 or more positive	70	67	96	117	24	21	59	0.10 ± 0.09
2 or more positive	54	42	78	113	76	67	73	0.45 ± 0.14
3 or more positive	45	13	29	127	120	94	62	0.23 ± 0.14

COMMENT

As stated in the introduction, the early reports on these tests showed rather promising results Calculating "J" values from the published data, 0 857 was obtained for the iodoacetic acid index,[8] 0 765 and 0 552 for the methylene blue reduction time and heat turbidity index, respectively,[9] and 0 700 for the mucoprotein level[4] Later reports on the iodoacetic acid index yield "J" values of 0 161 and 0 233 [5b c] which compare closely to the value of 0 244 obtained in the series reported here It seems quite probable that the main cause for the apparent discrepancy between the earlier reports and the later ones, including the one presented here, is that the earlier ones dealt with patients hospitalized for cancer, who were therefore, on the average, further advanced, rather than ambulatory patients This point has already been emphasized by Bodansky and McInnes[5c] The "J" value of 0 700 for the plasma mucoprotein level calculated from the data of Winzler and Smyth[4] was in hospitalized cancer patients compared with normal individuals The mucoprotein determinations in the present series, yielding a "J" value of 0 211, were performed in the same laboratory and clearly demonstrate the degree to which the extent of the cancer and the presence of other illnesses may cause overlapping of groups

The accuracy of any one of the four tests reported on here is certainly not sufficient to warrant its classification as a diagnostic test for cancer When the four tests are run as a battery and interpreted as positive if a minimum of two tests is positive, the accuracy is somewhat improved but still cannot be regarded as a diagnostic procedure The idea of running a battery of such tests, however, has received some support here and deserves further consideration with other existing tests as well as with future tests

The ideal diagnostic test gives neither false positives nor false negatives In the statistical analysis used in this report both types of error are regarded as equally undesirable, although it is admitted that this is a debatable question

CONCLUSION

The evaluation of four potential blood tests for cancer, the iodoacetic acid index, the methylene blue reduction time, the heat turbidity index, and the mucoprotein level have been carried out on ambulatory individuals with cancer or with nonmalignant diseases Analysis of the results shows that these tests give correct results in only approximately 60 to 70% of the cases and thus cannot be regarded as accurate diagnostic tests for cancer When the four tests are run as a battery and interpreted as positive if a minimum of two individual tests is positive, the correlation is slightly improved but still cannot be regarded as a test diagnostic of malignant disease

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CLINICAL NOTES

ALLERGY TO PITUITARY CORTICOTROPHIC HORMONE

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In view of the fact that the corticotrophic hormone (ACTH) is a protein, it is not surprising that hypersensitivity reactions to it would be encountered Our early work on the repeated use of corticotrophin to prevent anaphylactic reactions in guinea pigs sensitized to horse serum indicated that the animals were being sensitized to corticotrophin Our first experience with human sensitivity to corticotrophin is summarized in the following case report

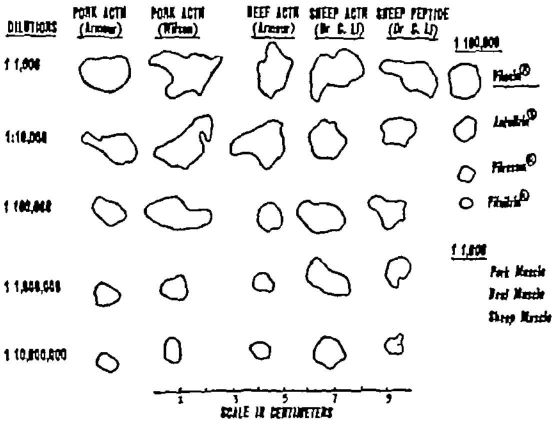
REPORT OF A CASE

F J , a woman, 60, was admitted to Passavant Memorial Hospital in August, 1950, under the service of one of us (E B) Her major complaint was a crippling rheumatoid arthritis of about 20-years' duration Cortisone was administered for 12 days, with some improvement in the arthritic symptoms Because the improvement was not considered adequate, a course of corticotrophin therapy was planned An injection of 25 mg of corticotrophin (Armour) was followed within five minutes by alarming symptoms, consisting of generalized urticaria and angioneurotic edema, probable edema of the larynx, signs of asthma, and profound shock After the injection of epinephrine and the use of additional measures, the patient recovered from this attack

Inquiry elicited the following pertinent information In the autumn of 1949 this patient had been treated at another hospital with corticotrophin The first injection produced a mild urticaria The injections were continued and the urticaria progressed On the 12th injection the reaction was severer and was associated with angioneurotic edema and shock The injections were then discontinued No history of previous injections of pituitary products could be elicited The personal or family history of allergy was not decisive

Preliminary skin tests made with corticotrophin (Armour) about two weeks after the last constitutional reaction indicated a high degree of allergy to this substance Subsequently, more complete studies were made These are summarized graphically in the Figure When corticotrophin solutions were injected intradermally in amounts of about 0 01 cc , whealing reactions were produced from dilutions as high as 1 10 million Use of another corticotrophin of pork origin [1] prepared by somewhat different methods produced identical results That this reactivity was not confined to the porcine corticotrophin was shown by the fact that use of beef corticotrophin [2] produced similar findings, and sheep corticotrophin [3] showed possibly even a greater reactivity This cross reactivity was not due to any generic relation between the animals in question, since 1 1,000 dilutions of extracts of pork, beef, and sheep muscle injected intradermally were completely nonreactive Of further interest is the fact that other pituitary preparations—anterior pituitary (antuitrin®), posterior pituitary (pituitrin®), vasopressin injection (pitressin®), and oxytocin injection (pitocin®)—also produced positive reactions It was thought possible that a peptide preparation of corticotrophin might be free from allergenic properties Use of a sheep corticotrophin peptide [3] also produced a high titer of skin reactivity The skin of a normal subject was injected in several sites with the patient's serum A positive passive transfer reaction was obtained to the porcine corticotrophin (Armour and Wilson) The other corticotrophin preparations produced false reactions in the 1 1,000 dilutions, while in higher dilutions no positive passive transfer test was obtainable No positive transfer to the other pituitary substances was demonstrable

The significance of allergy to corticotrophin is threefold First, it is of practical importance because it must be taken into consideration as a hazard in this type of therapy At the First Clinical ACTH Conference, several allergic reactions to this hormone were reported [4] At the Second Clinical ACTH Conference, December, 1950, Brown and Hollander [5] described the reactions in seven patients (out of a total of 212 treated) with allergy to corticotrophin In the discussion of that paper additional cases were cited by others



Tracings of the wheals produced by the intradermal injections of corticotrophin and other substances in the patient. Note that the end point had not yet been reached with 1 10 million dilutions of corticotrophin Attention is called to the entirely negative responses to tests with muscle extracts

Second, it is of interest that a substance which is presumed to improve allergic manifestations is capable of giving allergic reactions This seeming contradiction can be resolved when we realize that the action of corticotrophin is delayed and probably never adequate to prevent severe allergic reactions The fact that a 12-day therapy with cortisone did not sufficiently modify the allergic reaction to an allergenic substance like corticotrophin obviously indicates that we should not depend on such agents to provide complete prophylactic measures against allergy

Third, this case is of immunologic interest In some of the patients of Brown and Hollander, beef corticotrophin did not produce skin reactions and was tolerated clinically These were apparently examples of species specificity The nature of the other reactions was not definitely stated, but it may be assumed that they were organ or corticotrophin specific In our patient the specificity was related to corticotrophin or possibly to pituitary preparations in general Further work would have to be done to clarify this point It is interesting that our patient had an allergic reaction on the very first injection of corticotro-

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From the Allergy Research Laboratory Department of Medicine Northwestern University Medical School and Passavant Memorial Hospital

[1] Supplied by the Wilson Laboratories.

[2] Furnished by The Armour Laboratories

[3] Supplied by Dr C H Li Department of Biochemistry University of California

[4] Discussions of Traeger C H Forsham P H and Markson D in Mote J R. Proceedings of First Clinical ACTH Conference Philadelphia, the Blakiston Company 1950

[5] Brown E J and Hollander E. J Allergy to ACTH and the Use of Beef ACTH Proceedings of the Second Clinical ACTH Conference Chicago Dec 9 1950

phin This is not in accordance with accepted immunologic principles and would suggest that this patient had previously received pituitary substances

SUMMARY

An instance of severe allergic reaction to corticotrophin (ACTH) is described The patient was allergic to all forms of corticotrophin in high dilution as well as to other pituitary preparations The significance of the immunologic and clinical aspects of this subject is emphasized

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DECUBITUS ULCER IN RHEUMATIC FEVER TREATED WITH CORTISONE

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and
Clayton R Sikes, M.D , Atlanta

The increasing availability of cortisone and pituitary adrenocorticotropic hormone (ACTH) to the medical profession merits careful consideration of possible complications resulting from the use of these potent agents The following case demonstrates the probable interference with normal wound-healing processes by cortisone

REPORT OF A CASE

M K., a Negro girl aged 13, was admitted to the medical service of Grady Memorial Hospital on Feb 12, 1950, with the chief complaints of joint pain and fever

Six weeks before admission she had noted a mild sore throat which lasted three to four days and then disappeared Ten days before admission she experienced the onset of migratory polyarthritis, fever, anorexia, and occasional episodes of sharp precordial pain She was confined to bed at home two days prior to admission and finally reported to the hospital because of increasing severity of joint pain

Physical examination on admission disclosed a fever of 102 F , and diffuse swelling, heat, and exquisite tenderness over several joints Cardiac examination revealed minimal enlargement, tachycardia, and apical protodiastolic gallop rhythm No murmurs or pericardial friction rub were heard Laboratory work revealed leukocytosis, and elevated sedimentation rate, but no evidence of the sickling phenomenon An electrocardiogram was interpreted to be consistent with acute pericarditis

The admission diagnosis was acute rheumatic polyarthritis and pancarditis, and the decision was made to treat her with cortisone This medication was begun two days after admission, in doses of 100 mg intramuscularly every 12 hr Pain and tenderness associated with the polyarthritis were severe and were not controlled in spite of as much as 60 mg of codeine by oral administration every four hours Salicylates were not given The slightest movement in bed caused extreme pain, and the patient voluntarily remained quiet and resisted any attempts to change her position Six days after admission a dime sized sacral decubitus ulcer surrounded by a small zone of necrotic skin was discovered Thereafter she was moved from one side to the other at frequent intervals in spite of marked joint pain, and she was never allowed to remain on her back The area of skin involved had never been the site of a cortisone injection

One week after admission and five days after cortisone had been started, her rheumatic symptoms and fever were much improved In another 48 hr all evidence of polyarthritis had completely disappeared, and her temperature was normal At this time the dose of cortisone was reduced to 50 mg intramuscularly every 12 hr

During the next week the patient felt quite well, and there was no return of rheumatic symptoms However, the decubitus enlarged rapidly in spite of the absence of significant gross infection and every effort to prevent weight bearing on the area involved At the end of the second week of cortisone therapy it became obvious that the enlarging decubitus was assuming more serious significance than the underlying rheumatic fever No fresh granulation tissue was apparent, and gross infection from which colon bacilli were cultured was present The diameter of the ulcer at the skin surface was 7 in (17 8 cm) and underlying tissues were involved down to the sacrum Because of the postulated depression of mesenchymal tissue formation by cortisone and experimental data concerning wound healing, cortisone was discontinued and systemic antibiotics were begun Five days later, adequate debridement was carried out, in addition to the measures which had been instituted when the decubitus was first discovered The latter included protection of surrounding skin, moist dressings, and local antibiotics Thereafter, healthy granulation tissue appeared, and normal healing progressed slowly but steadily

Nine days after cortisone was discontinued, polyarthritis and fever reappeared, but an uneventful remission was produced with salicylates

Total duration of hospitalization was four months, the last three of which were required for treatment of the decubitus At the time of discharge it was thought that her rheumatic carditis had subsided

COMMENT

Ragan and others [1] have demonstrated delayed healing in cortisone-treated rabbits, employing the techniques of surgical incision of the ear and experimental femur fracture Subsequent microscopic examination revealed absence of the normal healing mesenchymal tissue response Poor granulation tissue formation has also been noted in three patients while on pituitary adrenocorticotropic hormone therapy [2] One patient with dermatomyositis exhibited delay in the healing of a biopsy incision A second patient being treated for disseminated lupus erythematosus demonstrated failure of two abscess drainage incisions to heal while pituitary adrenocorticotropic hormone was continued and prompt appearance of healthy granulation tissue after it was discontinued In a third patient a decubitus ulcer developed, similar to the one reported here, while under treatment for lupus Again, the well-recognized weakness of supporting tissues in Cushing's syndrome is worth recalling

In this case the decubitus ulcer probably appeared because of pressure necrosis of the skin, secondary to severe polyarthritis and immobilization during the first five hospital days when cortisone was ineffective in alleviating the exquisite joint pain and tenderness Since the relief of joint pain in acute rheumatic fever by cortisone may require as long as four to seven days, in the future we shall use salicylates in addition to cortisone when the expected beneficial results from the latter are delayed as in this case It is believed that this case merits attention because of the rarity of decubiti in well-nourished young persons and the possible relationship to cortisone It seems unlikely that cortisone directly produced the lesion, but the early rapid increase in size in the relative absence of gross infection and the failure of granulations to appear in spite

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Cortisone used in this case was purchased by the Georgia Heart Association as part of a grant for the study of rheumatic fever

[1] Ragan C and others The Effect of ACTH and Cortisone on Connective Tissue Bull New York Acad Med 26:251 1950

[2] Ragan C Grokoest A W and Boots R H Effect of Adrenocorticotrophic Hormone (ACTH) on Rheumatoid Arthritis Am J Med 7 741 1949

of heroic local measures were quite probably secondary to a cortisone inhibitory effect upon the normal wound-healing process

SUMMARY

A sacral decubitus ulcer developed soon after cortisone treatment was initiated in a case of acute rheumatic fever The rapid increase in size of the decubitus and failure of all local measures to induce healing were attributed to suppression of the normal wound-healing mechanism by cortisone Further use of this drug after the development of such a complication would seem inadvisable It is recommended that salicylates be used in addition to cortisone in the presence of severe polyarthritis

Grady Hospital

ACTIVE RHEUMATIC FEVER DURING PREGNANCY

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Active rheumatic fever occurring during pregnancy is rare Hamilton and Thomson[1] found seven authentic cases of recurrent rheumatic fever in 781 pregnant women with chronic rheumatic heart disease This represented 700 patient-years of study These authors further state that they "made the diagnosis with more or less certainty only ten times in twenty years of extraordinary opportunity "

The following case is reported in order that experience in the management of this complication may be gained

REPORT OF CASE

H R , a Negro female, had had no significant illnesses until she was 14 years old, when there was pain in the left foot and ankle for approximately one week She was then apparently well until age 18, when she became ill, having a painful, swollen right wrist, and fever As the wrist improved the fingers and knees became painful but not swollen She was treated at home with acetylsalicylic acid and was well after three weeks No mention of heart involvement was made to her

Again she was well and able to work until age 21, at which time she entered Morrisania City Hospital with migratory polyarthritis, fever, a soft systolic murmur at the apex of the heart, and a coarse systolic murmur noted at Erb's point The sedimentation rate was 24 mm in 30 minutes P-R intervals varied from 0 22 to 0 24 sec and the QT complex was 0 434 sec The S T segments were slightly elevated in leads 1, 2, and CF_4 The initial blood pressure of 164/84 fell to 140/80 after bed rest Hemoglobin value was 65% red blood count 3,400,000, white blood cell count 23,000, with 82% polymorphonuclear cells and 18% lymphocytes She responded to salicylate therapy and was sent home after three months The final diagnosis was inactive rheumatic heart disease and mitral insufficiency Fluoroscopy was not done

At age 23 she had an uncomplicated pregnancy with spontaneous delivery of a normal girl, weighing 6 lb 5 oz (2 8 kg), after 13½ hours of labor Postpartum one observer noted systolic and presystolic apical murmurs The urine on two occasions showed albumin No electrocardiograms were taken

She was next hospitalized the following year, on Feb 13, 1949, because her right knee had been hot, painfully swollen and tender for 24 hours Her menstruation had previously been regular, and because she had missed her last two periods she believed she was pregnant (the last menses was on Nov 26, 1948) Two weeks previously cardiac fluoroscopy, performed in the outpatient department, revealed enlargement of the left auricle, and of the inflow and outflow tracts of the left and right ventricles The electrocardiogram at that time gave a rate of 92 per minute, P-R interval 0 24 sec , and the QT complex 0 496 sec

The patient was a markedly obese, normally developed Negro woman, 24 years old, not too distressed except for pain around her right knee joint which was hot, swollen, tender, and reddened Her temperature was 101 F , pulse regular at 110 per minute, and respirations 26 per minute Blood pressure was 130/70 There was no dyspnea, cyanosis, clubbing of fingers or toes, or peripheral edema The neck veins were not distended No skin nodules, rash, or enlarged lymph nodes were observed The lungs were clear The liver edge was not palpable The heart was not enlarged to percussion, the point of maximal impulse was in the sixth left interspace within the midclavicular line Sounds were rapid, rate 110 per minute, regular, and of good muscular quality No thrills were felt Mitral first sound was not accentuated A harsh apical systolic murmur was transmitted to the aortic area P_2 was greater than A_2 Pelvic examination was omitted Hemoglobin value was 70%, white blood count was 13,500, with 78% polymorphonuclear cells and 22% lymphocytes Sedimentation rate was 30 mm in 30 min Repeated blood cultures were normal, as was the serologic study Electrocardiogram showed a sinus tachycardia, rate 120 per minute, P-R interval 0 26 sec , and QT complex 0 460 sec Urinalysis revealed no abnormality The Aschheim Zondek test (for pregnancy) was positive

The second day after admission the left knee and both ankles became swollen and tender She was treated with acetylsalicylic acid, 8 gm (120 grains) daily in divided doses Within 24 hours all signs and symptoms referable to the joints had disappeared She remained comfortable although tachycardia of 100 to 120 per minute and a low grade fever (100 F) persisted Digitalis leaf, one cat unit daily, had been given from admission until March 10 Salicylates had been stopped on March 4 Occasional extra systoles of ventricular origin were noted P R interval continued at 0 26 sec and a second stage conduction block was manifest in the electrocardiogram of March 7 Opinion was divided regarding interruption of pregnancy, and thus the patient continued the second trimester

Suddenly, on March 18, the 33rd hospital day, the temperature rose to 103 F and the pulse was regular at 160 per minute The patient was extremely apprehensive, dyspneic, sweating profusely, and coughing pink, frothy sputum Blood pressure was 186/86 Medium moist rales were present at both lung bases The electrocardiogram revealed a sinus tachycardia, rate 150 per minute, the P waves were buried in the T waves, and the QT complex was 0 569 sec She was treated with oxygen, morphine, mercurial diuretics, and penicillin At this time the clinical impression was either acute left ventricular failure, pulmonary embolus, or bronchopneumonia

Next day the temperature remained at 103 F , pulse 144 per minute, regular, blood pressure 130/80 The basal rales had cleared The neck veins were not distended The heart sounds were muffled at the apex The liver edge was not palpable There was no evident phlebitis, calf tenderness, or Homan's sign By the following day the temperature dropped to 100 F and the patient both felt and looked better After two days oxygen and penicillin were discontinued However, the signs of rheumatic activity persisted the temperature near 100 F , elevated sedimentation rate (24 mm in 30 min), increased P-R interval (0 26 sec), and tachycardia of 100 per minute Again staff opinion was divided on interruption of pregnancy, so the patient was allowed to proceed to term

During the latter part of March systolic and diastolic murmurs were heard at the base in addition to the apical systolic murmur previously present Blood pressure was 180/50 It was believed that aortic insufficiency could now be diagnosed definitely Since rales were heard occasionally at the lung bases on

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[1] Hamilton B E and Thomson K J The Heart in Pregnancy and the Childbearing Age Boston Little Brown & Company 1941

March 30, the patient was started on digitoxin and digitalized during the next three days She was maintained on 0 1 mg daily thereafter

She felt so much better on this regimen that she asked to return home She was therefore placed under the supervision of the Home Care Department on May 3, her 79th hospital day, and was visited by a medical resident physician each week On May 18, she was brought to the hospital for an electrocardiogram which showed a rate of 120 per minute, P R interval 0 20 sec, QT complex 0 465 sec, diphasic T in leads 1, 2, and CF$_4$, and depressed S T segments in leads 1 and 2 The sedimentation rate was 30 mm in 15 min

The following day she was markedly orthopneic and showed edema about the ankles Numerous moist wheezes were present The liver was tender to palpation and was found 3 fingerbreadths below the right costal margin On direct questioning the patient admitted that she had not taken any digitalis after her discharge from the hospital 16 days previously She was immediately given digitoxin and meralluride (mercuhydrin®), and kept at bed rest, and once again she responded

Spontaneous rupture of the membranes occurred on May 21 She was again hospitalized, continued on digitoxin 0 2 mg daily, and 2 cc. of meralluride twice weekly She was quite comfortable on bed rest, all signs of failure cleared Electrocardiogram on June 1 revealed a rate of 100 per minute, P-R interval 0 24 sec, and QT complex 0 460 sec The obstetric consultant stated that interruption of pregnancy was not warranted at this time

She was permitted to return to the home care service on June 3, and remained on complete bed rest with digitoxin and mercurials, as before, with no signs of failure About 8 a m on June 28 spontaneous labor began, this was about the seventh month of pregnancy Because of an outbreak of diarrhea in the nursery, the patient was transferred to another city hospital for delivery

Within several hours the patient became markedly orthopneic and apprehensive Her temperature rose to 101 F, pulse to 160 per minute (regular), respirations to 60 per minute, and the blood pressure to 240/70 Rales were present at both lung bases, the neck veins were distended, the liver edge was down 2 fingerbreadths, and the ankles were edematous The heart was enlarged both to left and right mitral systolic and diastolic and aortic diastolic murmurs were audible

She was treated with continuous oxygen by mask, morphine, intravenous mercurial injections, and 1 6 mg lanatoside C ("cedilanid) intramuscularly Her condition deteriorated steadily By 7 30 p m the cervix was completely dilated She was given a saddle block anesthesia and was easily delivered by low forceps of an apparently normal 3 lb (1 3 kg) male infant During the procedure she was given oxygen continuously and kept in high Fowler's position She seemed to improve for a short time after delivery, but despite therapy her failure increased and she died at 5 35 a m, 10 hours and five minutes after delivery Gradual respiratory embarrassment developed in the infant and he died 13 hours and 15 min after birth

Permission for post mortem examination was not obtained

COMMENT

The presence of active rheumatic carditis in pregnancy poses problems to both the internist and obstetrician First, the diagnosis of activity must be established, and second, a course of action must be determined During pregnancy it may be especially difficult to decide on the presence of activity, and, since this complication occurs so rarely, sufficient experience has not been accumulated to establish criteria for its management[2]

It should be emphasized that during a normal pregnancy new systolic murmurs may appear as well as a low grade fever, leukocytosis, elevated sedimentation rate, and vague joint pains Diseases such as sickle cell anemia, lupus erythematosis, and rheumatoid arthritis, must be differentiated In order to make a definite diagnosis of acute rheumatic fever, Jones[3] requires the presence of at least one major and two minor criteria Sokolow and Snell[4] state "the diagnosis of carditis, has depended largely on significant transient electrocardiographic changes, particularly partial auriculo-ventricular block and inverted T waves in Leads 1, 2, and 4, alone or in combination Other objective evidences of carditis have been less frequently observed " Taran[5] believes that electrocardiographic changes are most sensitive indicators of rheumatic activity Pardee[6] notes that sometimes in the electrocardiogram only was there any sign of rheumatic activity to be found

The question of the invariable presence of carditis in every case of acute rheumatic fever remains Sheehan and and Sutherland[7] believe that in any pregnant chronic rheumatic cardiac patient recurrent endocarditis may develop without any recognizable exciting cause other than the pregnancy itself In none of their cases were Aschoff bodies found, but this in itself does not exclude a diagnosis of rheumatic carditis[8] McKeown[9] describes the findings in six pregnant rheumatic cardiac patients with mitral stenosis who died in congestive failure Of these, four had rheumatic vegetations and Aschoff bodies of recent development in the myocardium One patient had the pregnancy itself In none of their cases were Aschoff nodules In only one was there complete absence of any evidence of recent rheumatic carditis

Active rheumatic fever lingers a variable length of time under present medical management The use of corticotrophin (ACTH) or cortisone gives promise of stopping the rheumatic infection[10] Until these substances become more generally available, the presence of a smouldering rheumatic carditis plus the load of pregnancy weights the balance toward congestive failure and possibly death

Cohen and Thomson,[11] and more recently Hamilton,[12] and Palmer and Walker[13] have shown by means of cardiac catheterization studies that the cardiac output in normal pregnant women increases gradually from the

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[2] Hamilton and Thomson[1] Bramwell C. and Langson E. Heart Disease and Pregnancy London Oxford University Press, 1938 Mac Kenzie J Heart Disease and Pregnancy London Oxford University Press 1921 Jensen J The Heart in Pregnancy St Louis, C V Mosby Company 1938 Schaeffer A Berl klin Wchnschr **23**: 79 1886 Heffernan E B Rheumatic Fever Complicating Advanced Pregnancy M J Australia **1**: 608 1922 Hollander A G and Goldsmith J W, Jr Acute Rheumatic Fever Complicating Advanced Pregnancy Am J Obst. & Gynec **42** 333 1941

[3] Jones T D Diagnosis of Rheumatic Fever J A M A. **126**: 481-484 (Oct. 21) 1944

[4] Sokolow M and Snell A M Atypical Features of Rheumatic Fever in Young Adults J A M A **133** 981-989 (April 5) 1947

[5] Taran L. M Clinical and Laboratory Diagnostic Criteria of Rheumatic Fever in Children Am J Med **2**: 368 385 1947

[6] Pardee, H E. B Electrocardiographic Findings in Rheumatic Heart Disease Am J Med **2** 528 537 1947

[7] Sheehan H L. and Sutherland A M The Pathology of Heart Disease in Pregnancy J Obst & Gynec Brit. Empire **47** 597 1940

[8] Boyd W The Pathology of Internal Diseases Philadelphia Lea & Febiger ed 4 1944

[9] McKeown F Acute Rheumatism in Pregnancy J Obst & Gynæc. Brit. Emp **55** 50-52, 1948

[10] Massell B F Warren J E Sturgis, G P Hall B and Craige E. The Clinical Response of Rheumatic Fever and Acute Carditis to ACTH New England J Med. **242** 692-698 1950 Thorn G W, Forsham P H Frawley T F Hill S R. Jr Roche M Staehelin D, and Wilson D L. The Clinical Usefulness of ACTH and Cortisone, ibid **242** 783 793 1950

[11] Cohen M E. and Thomson, K. J Studies on Circulation in Pregnancy Summary of Studies of Physiology of Circulation of Normal Pregnant Women New Concept of Nature of Circulatory Burden of Pregnancy and its Application to Management of Clinical Problems of Pregnancy J A M A **112** 1556-1562 (April 22) 1939

[12] Hamilton H F H The Cardiac Output in Normal Pregnancy as Determined by the Cournand Right Heart Catheterization Technique J Obst & Gynæc. Brit Emp **56**: 548 1949

[13] Palmer A J and Walker A. H. C. The Maternal Circulation in Normal Pregnancy J Obst. & Gynæc. Brit Emp **56** 537 1949

10th week A maximum level, about 26% above the nonpregnant state, is reached between the 26th and 29th weeks, after which there is a slight fall From the 38th week there is a marked fall in cardiac output almost to nonpregnant levels which continues through the puerperium[12]

Therefore, if a pregnancy is to be interrupted for cardiac reasons, this must be done as early as possible before the sixth lunar month Until the third lunar month this may be accomplished by a dilatation and curettage Afterward an abdominal hysterotomy must be performed Unless there are compelling obstetric indications, interruption should not be attempted after the sixth lunar month The cardiac load is reaching its maximum[14] The additional strain of an abdominal operation on the overburdened heart may cause failure and death Furthermore, toward term the cardiac burden of pregnancy falls markedly[12]

In the patient discussed here, three definite episodes of acute rheumatic fever occurred before the final pregnancy In the second month of pregnancy, two weeks before hospitalization, the electrocardiographic demonstration of an increased P-R interval, 0 24 sec, and a QT complex of 0 496 sec indicated another episode of active carditis which waxed and waned throughout the pregnancy and ended in the death of mother and infant Interruption in the first trimester was withheld because she seemed to improve Unfortunately, during the early part of the second trimester she went into congestive failure but passed the sixth lunar month before interruption was again feasible She went into spontaneous labor during the seventh month while the cardiac burden was at its maximum Death of the mother and infant followed within the first day postpartum

Thus, in the presence of active carditis, early interruption of the pregnancy might have saved the life of the patient The rheumatic fever would have been treated in the usual manner and, statistically, her chances for recovery from the acute carditis would have been excellent[15]

SUMMARY AND CONCLUSIONS

A case of active recurrent rheumatic fever with carditis beginning before the second month of pregnancy, and ending in the death of both mother and infant during the seventh month, is described

From a study of the pertinent literature and our experience with this patient we believe that when active rheumatic carditis is diagnosed pregnancy should be terminated as early as possible before the sixth lunar month Since the cardiac burden of pregnancy reaches its maximum after this time, interruption by an abdominal operation imposes an additional load which may cause failure and death In the last trimester the patient should be permitted to go to term, unless obstetric complications supervene, in the expectation that the physiological decrease in the cardiac load after the 38th week of gestation will change the prognosis

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[14] Cohen and Thomson[11], Hamilton[12] and Palmer and Walker[13]

[15] Levine S A Clinical Heart Disease, Philadelphia and London W B Saunders Company ed 3 1945

THROMBOCYTOPENIC PURPURA IN PREGNANCY

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In 1948 Barnes and Doan[1] found only six authenticated cases in the literature of thrombocytopenic purpura complicating pregnancy in which splenectomy was done, to this series they added two cases of their own In the literature there is still uncertainty regarding the influence of pregnancy on the indications for splenectomy, and our purpose in presenting a ninth case is to attempt to assist in resolving this problem

REPORT OF A CASE

B D, a 24-yr-old Negro woman, had a history, which dated back to early childhood, of easy bruising and of prolonged bleeding following injury Two years prior to admission she had bled profusely after a tooth extraction, and 18 mo prior to admission she had had a prolonged and profuse menstrual period diagnosed by a clinic physician in another hospital as a spontaneous abortion, however, her menses immediately prior to this episode had been regular, and the physician had made no pelvic examination or performed a curettage

She was seen in the third month of her second pregnancy, the first had gone uneventfully to term five years before, and the child is living and well except for bronchial asthma

At the first examination her hemoglobin content was 7 gm per 100 cc, and, despite therapy with iron for three months, it never rose above 8 gm per 100 cc Throughout her pregnancy her gums bled easily when she brushed her teeth, and in the sixth month of her pregnancy a generalized petechial eruption developed

Physical examination findings were normal at this time, except for those incident to her pregnancy and evidence of bleeding at the sites mentioned The spleen was not felt Laboratory findings included a bleeding time of seven minutes, normal clotting time, 90,000 platelets per cubic millimeter of blood, and a normochromic anemia with a hemoglobin content of 8 gm per 100 cc The percentage of reticulocytes, the prothrombin level, and the white cell count and differential count were normal There was no clot retraction in 24 hr

The patient deteriorated rapidly, both from a hematologic and clinical standpoint The platelet count fell progressively to 5,000 per cubic millimeter of blood Protamine sulfate was given intravenously because of the finding of increased heparin tolerance, but new petechiae appeared and a hemorrhage into the urinary tract developed Bone marrow aspiration showed all elements, including megakaryocytes, to be normal

The patient was given a transfusion and splenectomy was done Technical difficulty was encountered because of the large uterus, despite double ligation of the splenic pedicle, there was troublesome bleeding owing to the tearing of adhesions between the spleen and the parietal peritoneum

Postoperatively the rise in the platelet count was disappointing reaching a maximum of 50,000 per cubic millimeter of blood by the sixth postoperative day There was bloody drainage from the operative site The blood pressure was at shock level for two hours following the operation, and fetal heart sounds were not heard after this time

On the seventh postoperative day while still showing clinical evidence of active thrombocytopenic purpura, the patient was delivered of a stillborn macerated fetus with a blood loss of less than 150 cc from the placental site

During the following three days the patient became increasingly icteric and had daily hematemesis A presumptive diagnosis was made of splenic vein thrombosis On the 12th postoperative

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[1] Barnes A C and Doan C A. Splenectomy in Pregnancy Its Hematologic Indications and Obstetric Management, Am. J Obst & Gynec 55: 864 (May) 1948

day the patient had a massive hematemesis, she died the following day in shock and semicoma, despite transfusions, oxygen, and other supportive therapy

COMMENT

Pregnancy complicating thrombocytopenic purpura may modify the therapeutic approach with regard to the liability, if any, of these patients to exsanguinate from the placental site, the liability to premature separation of the placenta, and the liability of the newborn infant to be thrombocytopenic, if the mother is in relapse at the time of delivery

At first glance it would appear obvious that a patient with hemorrhagic tendencies would be likely to hemorrhage severely from the placental site Several reports in the literature have supported this view, notably, those of Mosher [2] in 1923 and of Rushmore [3] in 1925 Mosher states, "Nearly all cases of purpura hemorrhagica which go to term end fatally at delivery or soon after labor from hemorrhage " The evidence presented, however, is not convincing The majority of the 44 cases presented are culled from the literature of the 19th century, and clear differentiation is not made between idiopathic thrombocytopenic purpura, symptomatic purpura, and hemorrhagic states associated with scurvy and pregnancy toxemia Eleven of the cases are abstracted, and the stated cause of death in nine of these is not hemorrhage from the placental site Rushmore also reports (in 1925) a high maternal mortality in cases collected from the literature, probably including many of those reported by Mosher two years earlier Case reports are not offered in support of his statements

On the other hand, there are those authors who feel that thrombocytopenic purpura, even in relapse at term, does not increase the liability to postpartum hemorrhage Barnes [4] observed that postpartum blood in normal patients does not clot spontaneously unless seeded by blood from a cervical or vaginal tear He collected postpartum blood in normals from the cervical os and found that it behaved like defibrinated blood He concluded that the cessation of uterine bleeding depends only to a minor degree on hematologic factors and to a much greater degree on the closing of uterine sinuses by muscular contraction This view has been supported clinically by McGoldrick and Lapp,[5] who collected from the literature 76 cases of leukemia in pregnancy Of these only three died of postpartum hemorrhage, and two of the three had adequate obstetrical causes to explain the bleeding Burnett and Klass [6] in 1943 found in the literature only four authenticated cases of thrombocytopenic purpura in pregnancy, they added a fifth of their own Of the five cases, two delivered while in spontaneous remission, one delivered without excessive blood loss, although in relapse at the time and bleeding excessively from other sites, one had splenectomy intrapartum with remission, and one died of postpartum hemorrhage Polowe [7] did a splenectomy intrapartum with remission, the patient went normally to term Finn [8] delivered two previously splenectomized patients in relapse, neither bled excessively

It is difficult to assess the incidence of placental separation in these cases, since the only large series reported are those which had not received diagnosis that was sufficiently critical

It appears established that infants of thrombocytopenic mothers in relapse at the time of delivery may be themselves thrombocytopenic Finn [8] reported a thrombocytopenic infant in one of his two cases, Burnett and Klass [6] reported a case of hemorrhagic disease in the infant, although blood studies were not done, and Wintrobe [9] reported an additional case

In summary, a case has been presented of a woman with typical thrombocytopenic purpura who failed to respond clinically or hematologically to splenectomy in the course of pregnancy Nevertheless, she was delivered of a stillborn fetus a few days postoperatively without excessive blood loss This is in conformity with one school of thought found in the literature As a postmortem was not permitted, we only can speculate that this patient's failure to respond may have been caused by the presence of an accessory spleen

We feel that patients with thrombocytopenic purpura in pregnancy should be evaluated for splenectomy according to the usual indications and contraindications and without reference to the presence of the fetus

Dr Isadore Rothstein and Dr Ira Miller, of the Department of Pathology, assisted in the hematologic studies

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HOMOTRANSPLANTATION OF THE KIDNEY IN THE HUMAN

SUPPLEMENTAL REPORT OF A CASE

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Successful homotransplantation of human tissue is a subject of great interest to the medical profession Because widely diversified and conflicting theories still exist as to the efficacy of this procedure (since most of the important experimental work has been done on laboratory animals and the results may not always be similar in man), and inasmuch as these conflicting views have led to an attempt to evaluate homografting in man, this study was made

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[2] Mosher G Complication of Purpura with Gestation, Surg Gynec & Obst 36:502 (April) 1923

[3] Rushmore S Purpura as a Complication of Pregnancy Am. J Obst & Gynec 10 553 (Oct) 1925

[4] Barnes, A C Postpartum Blood Its Clotting Mechanism and Relation to Peripheral Blood Picture Am J Med Sc 213 463 (April) 1947

[5] McGoldrick J L. and Lapp W O Leukemia and Pregnancy A Case Report and Review of the Literature Am J Obst & Gynec 46 711 (Nov) 1943

[6] Burnett C W F, and Klass I A Review of the Problem of Purpura During Pregnancy J Obst & Gynaec Brit Emp 50 393 (Dec) 1943

[7] Polowe D Splenectomy in Pregnancy Complicated by Thrombocytopenic Purpura Hemorrhagica J A M A 124 771 (March 18) 1944

[8] Finn W Thrombocytopenic Purpura in Pregnancy Review of the Literature with Report of 3 Cases Am J Obst. & Gynec 48:497 (Oct) 1944

[9] Wintrobe M Clinical Hematology Lea & Febiger 1949 p 618

The preliminary report of this case appeared in THE JOURNAL, Nov 4, 1950 [1] Therein it was reported that the operation took place on June 17, 1950 At that time a kidney from a woman of approximately the same age, blood type, and Rh type as the patient was transplanted to the renal pedicle of the patient after the removal of a polycystic left kidney An end-to-end anastomosis of the renal vessels and ureter around a catheter was done, and the blood supply to the grafted kidney was noted to be re-established The postoperative course was essentially uneventful, and by the third postoperative day the urinary output was observed to exceed total fluid intake by 1,750 cc , this urinary output diminished to the normal level in relation to total intake by the 14th postoperative day Experimentally, it has been shown that transplanted kidneys sometimes excrete more than twice the amount secreted by normal kidneys for a short time following *transplantation* [2]

SUPPLEMENTAL REPORT OF A CASE

On the 52nd postoperative day indigo carmine dye was observed to emerge from both ureters following parenteral injection Ten days later (the 62nd postoperative day) a retrograde injection of contrast medium on the grafted side revealed an incomplete stricture of the ureter A small amount of the dye was observed by x ray to pass upward beyond the site of the obstructive stricture On the 63rd postoperative day an exploratory operation through the original flank incision showed the kidney to be normal in size and consistency It was living, and the blood supply from the renal vessels was present Repair of the ureteral stricture was deferred because of the presence next to the kidney of a small abscess 3 by 3 cm , which was probably due to fat necrosis and did not involve the homograft This abscess was drained and the wound was closed in 10 days

The general health of the patient continued to be excellent, *results of her blood chemistry studies and urinary output being* within the normal range (nonprotein nitrogen of Jan 25, 1951 was 35 mg per 100 cc) It is believed by us that the progressive ureteral stricture gradually greatly diminished the urinary output

On April 1, 1951, the patient was again operated on through the original incision The homograft had diminished in size from that of a normal kidney to approximately 4 by 3 by 2 cm The ureteral and pelvic structures were absent, but the sutures disclosed the site of the original ureteral anastomosis The blood supply was still present The tissue itself was not enveloped in fibrous tissue, it was brownish red, similar in color to normal kidney tissue, and still definitely alive but apparently not producing urine

The reports of Servelle and others [3] in Paris in THE JOURNAL, May 26, 1951, reveal three cases, in each of which kidney function has been observed following homotransplantation to the iliac vessels with a cutaneous ureterostomy

One of us has had personal communication with Drs Kuss and Tienturier [4] at the Hospital of Paris, who state that they have completed 16 kidney homotransplants, using cutaneous ureterostomy, and that several of their homografts have functioned for several months and are still functioning

In the experimental laboratory we have used the splenic pedicle as the site of renal autotransplantation, employing cutaneous ureterostomy, with good results

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[1] Lawler R. H West J W McNulty P H. Clancy E J and Murphy R. P Homotransplantation of the Kidney in the Human J A M A **144:** 844-845 (Nov 4) 1950

[2] Markowitz, J Experimental Surgery *Including Surgical Physiology* ed. 2 Baltimore Williams & Wilkins Company 1949 pp 440-460

[3] Kidney Transplantation Foreign Letters (France) J A M A. **140** 393 (May 26) 1951

[4] Kuss R and Tienturier J Personal communication to the authors

ACUTE STAPHYLOCOCCIC ENDOCARDITIS CURED WITH THE AID OF BACITRACIN

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and
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The accompanying case of staphylococcic endocarditis is reported because it is the first instance in which recovery from this disease may be credited largely, if not entirely, to the use of bacitracin Although the recovery rate from subacute bacterial endocarditis is very high if appropriate antibiotic therapy is instituted within a few weeks after onset, the outlook in cases of acute bacterial endocarditis, including those of staphylococcic endocarditis, is still very poor Only five of the patients in the 25 cases of Staphylococcus aureus endocarditis collected by Wilhelm and others [1] recovered after penicillin therapy, and only three patients in the nine cases studied by Levinson and others [2] recovered after treatment with penicillin and aureomycin The cure in the case presented here merits particular attention because the clinical manifestations were extremely severe and control of the infection had not been attained despite two weeks of treatment with massive doses of penicillin, aureomycin, and chloramphenicol

It is important to call attention to the usefulness of this additional antibiotic, bacitracin, in the control of staphylococcic endocarditis because in some, or many, cases the causative organism may be more sensitive to bacitracin than to penicillin or other available antibiotics Recent reports indicate that more than 50% of the strains of Staph aureus isolated are now resistant to penicillin [3]

Finally, some interesting observations will be noted as to the nature of a urinary abnormality that occurred in the course of parenteral bacitracin therapy

REPORT OF A CASE

A 28-yr -old diamond cutter was admitted to Mount Sinai Hospital for the first time on May 30, 1950 with a chief complaint of chills and fever of 10 days duration Since his childhood the patient, who had no history of rheumatic fever, had been regarded as a 'cardiac," had attended special classes in school,

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From the First Medical Service of Mount Sinai Hospital

[1] Wilhelm F Hirsh H L. Hussey H H and Dowling H F The Treatment of Acute Bacterial Endocarditis with Penicillin Ann Int Med **26** 221 1947

[2] Levinson D C Griffith G C and Pearson H E Increasing Bacterial Resistance to the Antibiotics A Study of 46 Cases of Streptococcus Endocarditis and 18 Cases of Staphylococcus Endocarditis Circulation **2** 668 1950,

[3] (*a*) Barber M and Rozwadowska Dowzenko M Infection by Penicillin Resistant Staphylococci Lancet **2** *641 1948* (*b*) *Hirsh H L.* Dowling H F and Robinson J A Organisms Resistant to Penicillin Arch Int Med **82** 310 (Sept.) 1948 (*c*) Nichols D R and Needham G M Aureomycin in Treatment of Penicillin Resistant Staphylococcus Bacteremia, Proc Staff Meet Mayo Clin **24** *309 1949* (*d*) *Forbes* G B Infection with Penicillin Resistant Staphylococci in Hospital and General Practice Brit M J **2** 569 1949 (*e*) Bergelman P M and Rantz, L A The Clinical Importance of Coagulase *Positive Penicillin-*Resistant Staphylococcus Aureus, New England J Med **242** *353 1950*

and had been deferred from military service For five years he had occasional episodes of palpitation, and two years prior to admission he was digitalized and placed on maintenance doses of this drug.

Two weeks prior to admission the patient became listless and three days later experienced chills and fever with the temperature rising as high as 106 8 F At the onset of his illness he was treated with penicillin for three days with no apparent effect, he was therefore admitted to a hospital where three cultures of blood and agglutination tests for Salmonella and Brucella organisms were taken and reported negative A diagnosis of subacute bacterial endocarditis seemed probable despite the negative cultures He was treated with 4 gm of aureomycin daily with an unsatisfactory response Therapy was therefore changed to the daily administration of 5 million units of procaine penicillin combined with 2 gm of streptomycin parenterally and 4 gm of chloramphenicol for five additional days Despite this combined antibiotic therapy, the patient continued to have a high spiking temperature Petechiae were observed in the eye grounds, and tender spots appeared in the fingers and toes The patient experienced a sharp attack of pain in the left upper quadrant of the abdomen after the 12 days of therapy described above

Examination Findings—On admission to Mount Sinai Hospital the patient was obviously acutely ill The temperature ranged daily between 100 F and 106 F The blood pressure was 132/74 The heart was enlarged almost to the anterior axillary line with the point of maximum impulse in the sixth interspace just within the anterior axillary line The rhythm was grossly irregular due to auricular fibrillation There was a grade III apical systolic murmur, harsh, loud, and well transmitted to the axilla A soft apical diastolic rumble was also audible at the apex The liver was enlarged 4 cm below the right costal margin, smooth, and nontender The spleen was palpable There was minimal clubbing of the fingers, and on the left thumb there was a small, nontender, erythematous patch 3 mm in diameter Scattered, tiny, reddish macules were noted on the small toe of the right foot There was no abnormality in the lungs

Laboratory Data—The urine was alkaline, its specific gravity was 1 026 There was a trace of albumin The sediment revealed six to eight white cells, four to six red cells, and many granular casts The hemoglobin content was 11 9 gm The red blood cell count was 3,950,000 The white blood cell count was 20,200, of which 59% were segmented neutrophils, 36% band forms, 2% lymphocytes, and 3% monocytes The electrocardiogram showed auricular fibrillation, left axis deviation, and a low T wave in lead 1 The blood urea nitrogen was 18 mg., the fasting blood sugar 80 mg., the serum bilirubin 0 4 mg, and the serum cholesterol 131 mg per 100 cc The erythrocyte sedimentation rate was 26 mm per hour (Westergren) The cephalin flocculation reaction was 2 + The sternal marrow was very cellular and showed no significant abnormality

Course—Within eight hours after admission the patient had a shaking chill, and his temperature mounted to 106 8 F A culture of blood drawn at this point yielded 26 colonies of Staph aureus A a cubic centimeter It was now apparent from the clinical course and the causative organism that the patient was suffering from acute, not subacute, bacterial endocarditis Since the portal of entry of the causative organism is usually more apparent in acute bacterial endocarditis than in the subacute form and since the Staphylococcus is often introduced through an infection of the skin, the patient was reexamined with these facts in mind Tenderness and swelling were found to be present over the medial aspect of the right great toe Review of the history disclosed that there had been a purulent infection at this site and that it had been grossly manipulated immediately preceding the onset of the present illness On May 31, the day after admission, the patient received 4 million units of crystalline penicillin, and on June 1 the dose was increased to 3 million units every three hours (24 million units daily) and 1 gm of aureomycin every four hours After three days of this regimen the temperature still rose to 104 F The clinical appearance improved slightly at first but then grew rapidly worse On June 3, the fourth hospital day, a positive blood culture of Staphylococcus was again obtained, but only in one flask Because two weeks had now elapsed since the onset of the disease without control of the infection despite the use of penicillin in huge doses alone and in combination with aureomycin and chloramphenicol in full dosage, and because of the well known speed at which acute bacterial endocarditis runs a fatal course, more vigorous antibiotic therapy or a modification in treatment appeared urgently indicated

A review of the sensitivity of the causative Staphylococcus (table 1) revealed that it was moderately resistant to penicillin in vitro, but the dosage administered was theoretically more than adequate to control the infection The microorganism was even more sensitive to aureomycin and chloramphenicol in vitro, but clinically aureomycin and chloramphenicol had proved ineffective The most potent antibiotic in vitro was bacitracin, which inhibited growth with half the concentration needed to inhibit the standard test organism Furthermore, the causative Staphylococcus was extremely sensitive to a combination of bacitracin and penicillin, much more so than to bacitracin or penicillin alone or to the combination of penicillin and aureomycin

TABLE 1—*Sensitivity of the Infecting Organism, Staph Aureus*

Antibiotic	Concentration, per Cc.	Index of Resistance (X Standard)
Penicillin	0.3 units	15 0
Aureomycin	0 4 γ	2.0
Terramycin	0.8 γ	8 0
Chloramphenicol	2 0 γ	3 8
Bacitracin	0 2 units	0.5
Penicillin Bacitracin	0 09 units 0 06 units	in combination
Penicillin Aureomycin	0 12 units 0 10 γ	in combination

Accordingly, bacitracin therapy was begun the evening of June 4, the fifth hospital day, with 10,000 units administered intramuscularly every four hours The bacitracin in combination with the penicillin and aureomycin produced a blood level of more than 40 units of penicillin activity and a bacitracin level of 17 units per cubic centimeter of serum (table 2) There followed a progressive decline in temperature, within two days the temperature did not exceed 101 F and thereafter fell over a week's time to levels between 99 F and 100 F With the abatement of fever there was a concomitant improvement in the remainder of the clinical course Except for one brief episode of tenderness of the left costovertebral angle on June 10, the embolic phenomena subsided

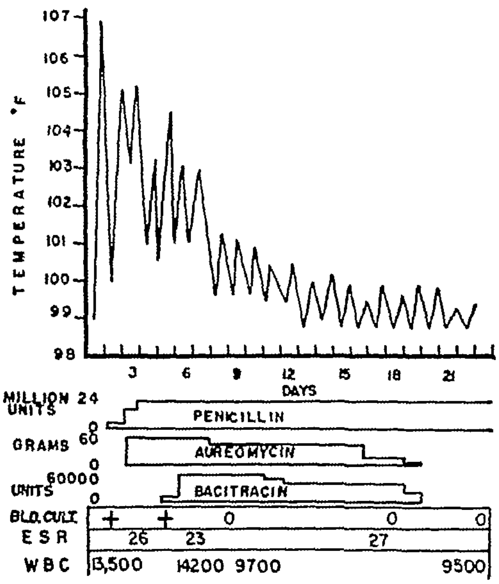
TABLE 2—*Antibacterial Activity of Serum After Antibiotic Administration*

Date	Antibiotic	Dosage Units	Antibiotic Level of Serum 3 Hours After Administration (Staph Aureus A Units per Cc)
6/2/50	Penicillin Aureomycin	3 million q 3 h 1 0 Gm q 4 h	Total 8
6/7/50	Penicillin Aureomycin Bacitracin	3 million q 3 h 1 0 Gm q 4 h 10 000 q 4 h	Total greater than 40 Bacitracin level 17 (bacitracin units per cc)
6/21/50	Penicillin	3 million q 3 h	20
6/20/50	Penicillin	3 million q 3 h	13
7/3/50	Penicillin	3 million q 3 h	13
7/11/50	Penicillin	3 million q 3 h	10

The patient tolerated the large doses of aureomycin poorly, suffering intense nausea and vomiting even before bacitracin was given The oral administration of aureomycin was therefore discontinued on June 14 and 900 mg of aureomycin a day was administered intravenously for two days and omitted thereafter

The bacitracin dosage was reduced to 40,000 units daily on June 9, the seventh day of its use, and after an additional seven and one half days it was discontinued A culture of blood drawn on June 17 showed no growth Penicillin was continued, the dosage being 24 million units a day, until June 19

The urinary findings were of particular interest The urine was studied daily and was consistently acid, with a specific gravity of 1 026 on admission and with random specimens consistently above 1 022, during the entire course of bacitracin therapy Subsequently, slightly lower values were found, but before the patient s discharge values of 1 024 were again noted Albuminuria was present only in faint traces There was no significant abnormality in the sediment Reducing tests for sugar were negative until June 17, the 14th day of bacitracin therapy, when a positive reaction equivalent to 1 + to a test for glucose was obtained Thereafter the urine was tested at frequent intervals revealing the same positive reaction At no time was acetonuria noted The fasting blood sugar was 80 mg per 100 cc, and an oral glucose tolerance test revealed a normal curve The blood urea nitrogen remained normal, and urine culture showed only Staphylococcus albus B The reducing substance in the urine was studied, and it was demonstrated that while the color of a copper solution was changed no copper oxide precipitated at room temperature There was no fermentation with yeast and tests for pentose were negative The reducing substance disappeared on July 19 One month later tests for this reducing substance failed to reveal its presence Previous workers[4] noted excretion of approximately 25% of the administered dose of bacitracin in the urine, with urinary concentrations not exceeding 50 units a cubic centimeter Because the bacitracin itself may have been responsible for the reducing reaction, tests for reducing properties were made with 200 units a cubic centimeter of bacitracin, as well as with lower concentrations In no instance was there a *positive reducing reaction*



Clinical course first 22 days at Mount Sinai Hospital First hospital day represents 13th day of illness Prior to this hospitalization large doses of penicillin streptomycin aureomycin and chloramphenicol had been administered without effect

The patient was discharged on July 24, 1950, after 56 days of hospitalization He was afebrile His heart murmurs were unchanged, and the spleen was no longer palpable The blood leukocyte and differential count were normal A mild anemia and an elevation of sedimentation rate were present The urine was normal except for a trace of albumin The blood urea nitrogen was normal Three daily consecutive cultures of blood taken after all antibiotic therapy was discontinued revealed no growth During his stay at Mount Sinai Hospital the patient had received a total of 660,000 units of bacitracin in 15 days, 1 billion 11 million units of penicillin in 44 days, and 66 gm orally and 2 1 gm intravenously of aureomycin in 17 days He has remained well up to the time of writing, five months after treatment was completed

COMMENT

The clinical differentiation between acute staphylococcic bacteremia without endocarditis and acute staphylococcic endocarditis is often difficult The chills and extremely high fever, the positive blood culture, and even the splenomegaly occur in either disease In this case the additional findings of rheumatic cardiovalvular disease, petechiae, an Osler node, and the absence of an active bacterial focus (other than valvular vegetations) which could maintain the bacteremia supported the diagnosis of acute bacterial endocarditis Since there was no striking change in the character of the murmur and no development of a new murmur, there is no direct evidence that bacterial vegetations actually involved the endocardium However, the diagnosis of bacterial endocarditis appears justified whenever a persistent bacteremia is found in the presence of a valvular lesion and in the absence of any other overt bacterial infection in direct contact with the blood stream

The knowledge that acute bacterial endocarditis usually runs its complete and fatal course within four weeks interdicted any prolonged periods of experimental therapy and impelled us to rapid modifications when a brief trial of a given regimen failed to give prompt evidence of control of the infection Furthermore, delay in appropriate therapy might court the risk of suppurative focuses in the brain or other organs that would be difficult to eradicate with doses of antibiotics which would have been effective earlier Since the temperature, after a slight fall, had risen to 104 F and the patient's clinical condition had not significantly improved, despite a week's treatment with at least 5 million units daily of penicillin and three days of treatment with 24 million units daily of penicillin together with the 4 to 6 gm daily of aureomycin and chloramphenicol given previously, further change in therapy was considered urgently indicated At this point bacitracin therapy was instituted, both because the other antibiotics had failed and because in vitro sensitivity studies indicated that bacitracin might be more effective For the reasons mentioned above and because bacitracin alone had not yet been found curative in cases of staphylococcic endocarditis, the penicillin and aureomycin were continued together with the bacitracin The in vitro studies had also indicated that penicillin and bacitracin in combination were much more effective against the causative Staphylococcus in this case than bacitracin alone

Because the other antibiotics were continued, it is difficult to assess accurately the relative importance of bacitracin in effecting recovery It was felt that the patient's condition was critical and had been deteriorating under penicillin and aureomycin therapy and that there was a striking and rapidly favorable clinical response to the addition of bacitracin therapy Credit for recovery may be given to the action of bacitracin on the basis of other objective data, namely, the persistent fever and positive blood culture on the day that bacitracin therapy was begun and the rapid lysis of fever and the negative blood cultures after the therapy was instituted Nevertheless, the possibility cannot be excluded that the penicillin alone or in combination with aureomycin might have eventually effected a cure since the temperature had been reaching lower levels (104 F) and the blood culture, although still positive, suggested that relatively fewer organisms were present in a unit of blood It is also uncertain whether the bacitracin alone would have been equally effective or whether the potentiating effect of combined penicillin and bacitracin was essential

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[4] Zintel H A Ma R A Nichols A. C., and Ellis H The Absorption Distribution Excretion and Toxicity of Bacitracin in Man Am J M Sc 218:439 1949

With respect to staphylococcic infections in general and staphylococcic endocarditis in particular, the availability of bacitracin as an effective antibiotic is especially timely An increasing number of reports [3] indicate that more and more strains of staphylococci are becoming resistant to penicillin, hitherto the preferred antibiotic against staphylococci British workers [3a,d] have reported that as many as 60 to 70% of the strains of staphylococci isolated from hospital patients were resistant to penicillin Reports in this country also indicate that there has been a striking and sudden increase in the percentage of penicillin-resistant strains of staphylococci [3c,e] Penicillin resistance is apt to be of particularly serious consequence in cases of bacteremia or endocarditis Nichols and Needham [3c] reported from Mayo Clinic that in a series of 15 patients with bacteremia due to Staph aureus the organism was resistant to penicillin in 12 instances Similarly, Hirsh and associates [3b] isolated penicillin-resistant staphylococci in four cases of bacteremia or endocarditis The importance of establishing the efficacy of other antibiotics against these penicillin-resistant staphylococci is apparent Streptomycin may be effective in vitro, but resistance to this antibiotic develops during therapy [3c] Aureomycin has sometimes proved effective in generalized staphylococcal infections after penicillin has failed [5] but did not control the infection in our case or in a case described by Astler and Morgan [6] The development of resistance to aureomycin in cases of staphylococcic endocarditis was noted by Levinson and associates [2] The encouraging experience with bacitracin suggests that this antibiotic may supply a much needed additional effective agent against these serious staphylococcic bacteremias with and without endocarditis

There have been several reports on the nephrotoxic activity of bacitracin [7] By means of clearance techniques reduction in both glomerular and tubular function was demonstrated [7e] Proteinuria was a constant early finding but disappeared rapidly (in 16 days), whereas, the reduced glomerular and tubular function required seven to nine weeks for recovery [7e] It is uncertain whether the toxicity is due to impurities or to bacitracin itself The observation that toxicity was much more frequent in lots of bacitracin prepared by the deep tank method than by the surface method suggests that the toxicity may be due to impurities The gravity of the case presented here appeared to warrant the use of bacitracin despite reports of its nephrotoxicity No significant increase in proteinuria occurred, and, while the specific gravity of random specimens fell slightly, there was no significant reduction in concentrating power of the kidney Several authors have observed that "fasting glycosuria" has occurred under bacitracin therapy [7d,e] Positive reactions to reducing tests for glucose were obtained here also, but it was demonstrated that the reducing substance was neither glucose nor pentose The findings in this case indicate that while a reducing substance may appear in the urine of bacitracin-treated patients there is no glycosuria The nature of the reducing substance was not identified Bacitracin itself is not a reducing substance in concentrations up to 200 units a cubic centimeter

No significant toxic manifestations of a gastrointestinal nature or local reactions at the site of injection were noted

SUMMARY

This is a report of the first case of acute Staph aureus endocarditis in which cure followed the parenteral use of bacitracin in conjunction with other antibiotics The bacitracin appeared to be effective after the disease had not been controlled by huge doses, over a period of 12 days, of penicillin, aureomycin, and chloramphenicol No significant renal or other toxicity was associated with the administration of bacitracin A reducing substance, previously regarded as glucose, was also noted in this case during bacitracin therapy It was, however, demonstrated to be neither glucose nor pentose Because of the increasing frequency of penicillin-resistant strains of Staph aureus, the availability of bacitracin as another potent antibiotic in serious staphylococcic bacteremias and endocarditis is noteworthy

Dr Frank L Meleney supplied the bacitracin used in this case

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Schism in Psychiatry.—The psychiatric view of man has changed in half a century Fifty years ago, the psychiatrist was likely to see only the somatic man The general psychiatric quest was for central nervous system pathology to explain the various derangements The reaction which followed, placed emphasis on psyche rather than soma, on function rather than structure Here, however, even when there was great protestation that the psyche was a function of a somatopsychic entity, that all psychiatric disorders must be considered in relation to physical factors, constitution, or biological determinants, there was a tendency to discuss mental disorders as if the soma did not exist. Meyer was one of the few to raise a voice against this professional schizoid behavior, and Meyer was venerated rather than followed, while Freud, his pupils and the deviant psychoanalytic schools, who all emphasized verbally that they were convinced of important somatic factors, did little to establish or study them

It is questionable if shock treatment and the psychosurgical procedures have dipped the balance back toward a somatic orientation Psychosomatic medicine has thrown a bridge across the psychiatric gap but it has been too narrow to accommodate the full breadth of the concepts on either side It has given access to a new field, rather than helped in exploration of the fundamental relationships of psychic and somatic factors in the major psychiatric disorders Any full exploration will include, among many things, hormone relationships —'Brighten the Corner," an editorial in the *Psychiatric Quarterly*, April, 1951

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5 Dowling H F Lepper M H, Caldwell E R Jr Whelton R L and Sweet L K. Aureomycin in Various Infections Report of 180 Cases and Review of the Clinical Literature M Ann District of Columbia **18**:335 1949 Nichols and Needham [3c]

6 Astler V B and Morgan H R. Some Biologic Complications of the Prophylactic and Therapeutic Use of Antibiotics Univ Hosp Bull Ann Arbor **16** 127 1950

7 (*a*) Meleney F L and Johnson B A Bacitracin Am J Med **7**:794 1949 (*b*) Michie A J Zintel N A, Ma R A Ravdin I S and Rapnl K The Nephrotoxicity of Bacitracin in Man Surgery **26** 626 1949 (*c*) Smith L W, Schultz, F N Jr, Ott W L and Payne H G A Comprehensive Study of the Renal Damage Produced in Mice by Various Lots of Bacitracin J Clin Investigation **28** 1018 1949 (*d*) Scudi, J V Corit A., and Antopol W Some Pharmacological Properties of Bacitracin III Chronic Toxicity of Commercial Bacitracin in the Dog and Monkey Proc Soc Exper Biol. & Med **66** 558 1947 (*e*) Miller J H McDonald R K and Shock, N W The Effect of Bacitracin on Renal Function J Clin. Investigation **29** 389 1950 (*f*) Zintel Ma Nichols and Ellis [4]

COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

This paper is one of a series requested by the Council on National Emergency Medical Service to inform the medical profession on problems pertaining to civil defense. It does not necessarily reflect, however, the opinions of the Council or of any other official body unless so stated in the article.

C. JOSEPH STETLER, *Secretary*

ATOMIC BOMB INJURY: RADIATION

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The syndrome of acute radiation injury to be considered in this article is the term applied to the symptom complex, or diseased state, which results from exposure of the whole body or a major portion of it to the initial nuclear radiation of an atomic bomb. This term should be clearly distinguished from irradiation sickness, which is commonly used to describe the symptom complex resulting from therapeutic irradiation. It should also be distinguished from surface radiation injury. This term is properly applied to injuries of the skin and subcutaneous tissues resulting from x-radiation or from contact or near contact with radioactive material, such as fission products and induced radioactivity. Injuries of this type related to atomic energy are due largely to beta-ray-emitting isotopes. Internal radiation injury may result from the selective deposition, such as in bone or thyroid, of radioactive material that has been inhaled or absorbed through the gastrointestinal tract or wounds. The two latter types of radiation injury may be caused by residual radioactive contamination.

Initial nuclear radiation from an atomic bomb consists of gamma rays and neutrons emitted during the first minute after atomic explosion. Approximately one-half of the initial nuclear radiation is delivered in the first second, and 98% has been delivered by the end of one minute. The syndrome of radiation injury due to exposure of the whole body may occur as a result of any sort of atomic explosion: air burst, surface burst, or underwater burst. In an air burst or a surface burst, persons who are in the open, unshielded by buildings or natural objects, will constitute the most exposed group for any given distance. Those who are shielded by natural objects or who are in buildings made of brick, concrete, or metal will be less exposed, and those who are in tunnels, caves, or air raid shelters will be the least exposed.

When the data of the Japanese casualties were analyzed, it was found that it was possible to evaluate, in a general way, the effect of shielding afforded by buildings and shelters. The symptoms and the results of radiation injury to persons who were inside buildings were equivalent to those observed in persons who were in the open, unshielded, and approximately 500 yards farther away from the bomb. It is evident from animal experiments that effective shielding of some portion of the body, such as the spleen, the head, or the abdomen, may reduce the mortality. Only those who were certainly in the open and unshielded, or were in wooden buildings, can be assumed to have received the maximum dose of initial nuclear radiation which could be expected at a given distance. It is proper to assume that all others have received less than the dose that is theoretically possible. It is apparent that it will not be desirable to classify casualties solely on the basis of their distance from the bomb burst.

CLINICAL CLASSIFICATION OF THE SYNDROME OF ACUTE RADIATION INJURY

On the basis of the study of the Japanese casualties, and by analogy with other forms of trauma, casualties may be divided roughly into two classes: (1) uncomplicated radiation injury and (2) radiation injury complicated by burns and wounds. It is not now known how important such complications may be, but it appears that the effect may be considerable. This paper will be limited to uncomplicated radiation injury.

The syndrome of acute radiation injury due to exposure of the whole body to the initial nuclear radiation of an atomic bomb was found to occur in three fairly distinct forms, the features of which are summarized in the following outline:

1. Very severe cases (in general, radiation exposure of 600 r or more)
    (*a*) First day
        Malaise, nausea and vomiting beginning one to two hours after exposure and continuing for several days
        Prostration
        Rapidly developing and persistent severe leukopenia
    (*b*) Next few days
        Diarrhea and rising sustained fever
    (*c*) Up to two weeks
        Death in coma and delirium within 14 days after exposure
        Purpura and epilation may appear shortly before death
2. Severe cases (in general, radiation exposure of about 400 r)
    (*a*) First day
        Nausea and vomiting usually occurring a few hours after exposure but rarely persisting more than 24 hours
    (*b*) Second day
        Lymphopenia (about 800 lymphocytes per cubic millimeter)
        Total leukocyte count variable
    (*c*) Fourth to 20th days
        First, a period of relative freedom from symptoms, with
            (1) Perhaps some malaise and easy fatigability
            (2) Persistent lymphopenia
            (3) Fluctuating leukopenia

The opinions and assertions contained herein are the personal ones of the authors and are not to be construed as official or as reflecting the views of the Department of the Navy, the Naval Service at large, or the Atomic Energy Commission.

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Then, at any time up to the 20th day, the individual may become seriously ill, showing any or all of the following symptoms
(1) Epilation (chiefly limited to scalp)
(2) Purpura and other hemorrhagic complications such as melena, epistaxis, menorrhagia and metrorrhagia
(3) Oropharyngeal ulcerations
(4) Diarrhea
(5) Fever
(6) Severe leukopenia
(7) Infection and breakdown of healing wounds
(8) General sepsis
(*d*) 20th to 40th days
Death occurs in 50% of untreated persons with sepsis or with hemorrhagic manifestations dominating the picture

3 Mild to moderately severe cases (in general, radiation exposure of 200 to 300 r)
(*a*) First day
Vomiting may occur a few hours after exposure
(*b*) Next two weeks
No definite symptoms
Moderate lymphopenia
(*c*) After two weeks
One or a few of the following may appear
(1) Epilation (chiefly limited to scalp)
(2) Malaise
(3) Sore throat
(4) Petechiae
(5) Diarrhea
(6) Weight loss

Very Severe Radiation Injury —In this form, vomiting commences shortly after the bombing and may persist for several days Progressive malaise leading to prostration begins shortly after the bombing, and symptoms continue unabated until death Diarrhea usually appears within a few days and persists Fever of the sustained type occurs within a few days of the bombing and increases progressively Without therapy, death is invariable and may occur at any time from a few hours up to 14 days Epilation and purpura may appear shortly before death Hemorrhagic manifestations do not seem to be responsible for the fatal outcome Progressive leukopenia is present from the day of the bombing

Severe Radiation Injury —In this form, vomiting occurs shortly after the bombing and seldom lasts longer than the first day A latent period follows, during which the only symptom is increasing malaise The end of the latent period occurs in four to 20 days and is marked by the appearance of one or all of the following characteristic symptoms of radiation injury epilation, purpura, other manifestations of the hemorrhagic state, and oropharyngeal lesions Concurrently, a variety of conditions may develop (diarrhea, infection and breakdown of healing wounds) The patient rapidly becomes very ill with fever, and prostration and a severe hemorrhagic state may occur If death follows, it is usually due to acute blood loss, septicemia, or hemorrhage into vital structures Death may occur at any time between the third and sixth week after the bombing The hematological findings in these patients are most pronounced during the third to the fifth week and consist of severe leukopenia, thrombopenia, anemia, and prolonged bleeding and clotting time As recovery occurs, the hemorrhagic manifestations subside and spontaneous defervescence takes place Among the Japanese, the mortality rate for patients with severe radiation injury varied from 25% to more than 50% It is convenient to consider that severe radiation injury in man is equivalent to the type of injury that occurs in experimental mammals given a comparable dose of x-rays

Mild to Moderately Severe Radiation Injury —In this form, any of the characteristic symptoms may occur, but it is distinctly unusual for all of them to be present The interval between exposure and the occurrence of the general symptoms is longer than in the preceding types The changes in the hemogram are less profound than in the severe forms, and they occur somewhat later in the course of the disease Recovery is the rule for better than 90% of patients with moderately severe radiation injury The deaths that occur are usually the result of complications, such as tuberculosis, bronchiectasis, chronic abscesses, and refractory anemia, and as a rule *occur later than the sixth week*

Since the number of persons exposed to an atomic bomb increases geometrically with the distance from the explosion, it follows that there will be more patients with the mild to moderately severe type of radiation injury than with the severe type The smallest group would ordinarily be the very severe cases Because of the large number of casualties produced by a single atomic explosion, it is of the utmost importance to estimate, as promptly as possible, the severity of the radiation injury experienced by each patient It is obviously uneconomical of medical supplies and medical personnel—and, in fact, unnecessary—to devote much attention to patients with moderately severe and mild radiation injury

In general, few who are farther than one mile from the site of an atomic bomb[1] explosion will experience the syndrome of severe radiation injury, regardless of whether they were shielded or outdoors Badly burned patients may be an exception to this rule, but they would require extensive medical care for their burns in any event On the basis of our present knowledge, it would appear that the syndrome of severe radiation injury, uncomplicated by burns or wounds, would develop in not more than 5% of those who received less than 200 r Regardless of whether the exact location of the person at the time of exposure is known, or whether personnel dosimeters are available, the severity of the radiation injury can be judged with fair accuracy, once the symptoms have developed, by an evaluation of the symptoms and the laboratory findings

CLINICAL DIAGNOSIS OF RADIATION INJURY

Analysis of the data collected by the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan disclosed that in persons exposed to an atomic explosion, epilation and purpura could be designated specific symptoms of radiation injury Three other symptoms were designated suggestive symptoms of radiation injury vomiting on the day of the bombing, oropharyngeal lesions which occurred before the 39th day, and hemorrhagic manifestations other than cutaneous purpura A variety of other symptoms were subjected to statistical evaluation, such as anorexia, malaise, diarrhea, bloody diarrhea, and fever, but the degree of correlation was low

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[1] The type of atomic bomb referred to is equivalent to 20 kilotons of trinitrotoluene (TNT)

Among the Japanese, epilation commenced during the second week after the bombing and was largely confined to the hair of the scalp The mean day of onset of epilation was the 25th Regrowth of hair was apparent after the sixth week in most surviving patients and was usually complete by the fourth or fifth month

Among the Japanese, purpura was of the cutaneous variety, such as would be readily apparent on inspection It was rarely observed before the third week, and the mean day of onset was the 24th In general, patients with cutaneous purpura which was extensive displayed other signs of the hemorrhagic state

These two symptoms, epilation and purpura, offer the best clinical indication of the severity of the exposure to radiation Patients with both these symptoms usually had the suggestive symptoms referred to above It was found that patients with both these symptoms had the lowest leukocyte counts

As presumptive evidence of radiation injury, vomiting on the day of the bombing is most significant Its early occurrence, and the fact that it is not likely to be overlooked by the patient, makes it of great help in triage and in evaluation It is of interest that the Japanese physicians attributed the vomiting on the day of the bombing to psychological causes However, when the large volume of clinical data was subjected to analysis, the relation between this symptom and probable exposure was indubitable

The oropharyngeal manifestations consisted of a dusky inflammation of the mucous membrane, soreness of the gums, and, in severe cases, an ulceronecrotic breakdown of the tissues, such changes were rare before the third week, and the mean day of onset was the 22nd In severe cases, the appearance of the lesions resembled those seen in agranulocytic angina In some patients, the laryngeal and the upper tracheal mucosa were affected similarly

The hemorrhagic manifestations other than cutaneous purpura included epistaxis, menorrhagia and metrorrhagia, melena, hemoptysis, hematuria, and bloody emesis Most patients with cutaneous purpura of any extent also had some or all of these hemorrhagic manifestations In some whose exposure to radiation was less than the amount required to cause severe radiation injury, these other hemorrhagic manifestations occurred in the absence of cutaneous purpura This suggested that in certain persons with pre-existing disease, a mild hemorrhagic state tended to produce gross hemorrhage in the diseased tissue (e g , with pulmonary tuberculosis or uterine fibroids)

The most serious obstacle to the clinical determination of the severity of radiation injury is the late appearance of the clinical symptoms In general, the earlier the appearance of the so-called specific or suggestive symptoms, the severer the radiation injury

LABORATORY DIAGNOSIS OF RADIATION INJURY

There is no single laboratory procedure that is by itself diagnostic for radiation injury Severe radiation injury to the whole body produces pronounced leukopenia (lymphopenia and granulopenia), thrombopenia, and anemia

Total Leukocyte Count —Leukopenia invariably follows whole body radiation injury In the very severe type the leukocyte count falls to less than 1,000 per cubic millimeter within the first week With less severe degrees of radiation injury the lowest white cell counts are seen two to four weeks after exposure It was the opinion of the Japanese physicians that recovery was unlikely if the total leukocyte count was less than 500 per cubic millimeter

Lymphocytes —In the first few days after exposure the lymphocyte count has greater diagnostic value than the total leukocyte count Lymphocytes start to decrease immediately after exposure Pronounced lymphopenia appears within 24 hours A total lymphocyte count less than 800 per cubic millimeter 48 hours after exposure is presumptive evidence of severe radiation injury A lymphocyte count in excess of 1,500 per cubic millimeter 48 hours after an atomic bombing indicates that radiation injury of clinical significance is unlikely

Neutrophilic Granulocytes —With severe radiation injury, the neutrophils decrease less rapidly than the lymphocytes With doses of radiation that are uniformly fatal to experimental animals the total granulocyte counts are less than 1,000 per cubic millimeter within one week With lesser doses of radiation, such low levels may be attained but it takes much longer, perhaps 10 to 20 days

Thrombocytes —For the first three to four days following severe radiation injury, the thrombocyte count remains fairly stable Beginning four to five days after exposure, the thrombocyte count drops rapidly, attaining values close to zero during the second week Thrombocytes may remain at this low level for two to four weeks

Anemia —In severe radiation injury, anemia develops slowly It may be two to three weeks before it is evident The lowest red cell counts are observed four to five weeks after exposure A rapidly decreasing blood hemoglobin, red blood cell count, or hematocrit is a serious sign and suggests rapid blood loss

Reticulocytes —Reticulocytes decrease in number promptly and are almost absent for three to four weeks Any subsequent increase in reticulocytes is a good prognostic sign

A prominent clinical symptom of radiation injury is the hemorrhagic state that begins between the second and fourth week The severity of this hemorrhagic state is closely correlated with the level of thrombopenia It is characterized by an increased capillary fragility, prolonged bleeding time, and prolonged clotting time

SUMMARY OF THE DIAGNOSIS OF RADIATION INJURY

The diagnosis of the syndrome of radiation injury and the estimation of its severity depend on a proper evaluation of three factors 1 The probability that nuclear radiation sufficient to cause injury reached the patient. This will depend on a knowledge of the patient's location at the time of the bombing, and the estimate of the kilotonnage of the bomb If personnel dosimeters are available, the data obtained from them must be correlated not only with the foregoing but also with the clinical symptoms 2 The existence or the development of any or all of the typical symptoms of radiation injury Early after the bombing, it is proper to attach great significance to the presumptive diagnostic sign of vomiting on the day of the bombing Particular attention should be directed to the tempo at which symptoms develop Early appearance is indicative of greater severity of radiation injury 3 The occurrence and the time-trend of leukopenia and lymphopenia are significant, and should aid materially in the accurate evaluation of the severity of the injury In the absence of cutaneous purpura or other hemorrhagic manifestations, abnormality of clotting and bleeding time does not necessarily imply that the patient has a severe form of radiation injury In conclusion, the diagnosis of radiation injury and the estimation of its severity constitute, essentially, a clinical problem and should be possible on the basis of a brief history, physical examination, and a minimum of laboratory studies

TREATMENT OF THE SYNDROME OF ACUTE WHOLE BODY RADIATION INJURY

In the following discussion the recommended therapy is aimed only at the syndrome of radiation injury Actually, many if not the majority of cases will be complicated by some other type of injury—trauma, burns, or both—which will, of course, require appropriate treatment Certain general considerations must be borne in mind At present there are available no specific agents of proved therapeutic value either for prophylaxis or for treatment following radiation Treatment, therefore, is symptomatic This does not by any means imply that efforts at therapy are a waste of time

The syndrome of severe radiation injury (seen in persons who have received in the neighborhood of 400 r) is, essentially, that of a self-limited disease and at the outset resembles agranulocytic angina As the illness progresses, the hemorrhagic manifestations become more prominent If the patient can be tided over the two to five week period during which pancytopenia is more or less complete, he will in the majority of instances recover normal bone marrow function and normal ability to combat infection The purpura and other manifestations of a hemorrhagic state will disappear, the various formed elements will return to their normal concentrations in the blood, and the lymphoid tissue will return in normal abundance Furthermore, the individual tissues and organs in survivors will show no evidence of radiation damage greater than what they would have sustained singly from the given dose of radiation Treatment from the very beginning should be directed at minimizing the effects of the tendency to hemorrhage and inability to combat infection Wounds should be carefully débrided and every effort made to accomplish healing by primary intention in the shortest possible time This will minimize the tendency for wound disruption during the active stages of the illness All the symptoms other than the initial nausea and vomiting and the loss of hair seen at Hiroshima and Nagasaki can be adequately explained on the basis of pancytopenia, including thrombopenia, plus disturbances in the normal antibody function against bacterial infection Certainly there is, at the present time, insufficient evidence to warrant stockpiling of such items as flavonoid compounds, toluidine blue, protamine, and vitamin B_{12}, as essential to the proper treatment of this type of casualty On the other hand, the data from Japan attest the usefulness of antibiotics and transfusions The value of antibiotics has been substantiated by a number of experimenters

In the absence of data to the contrary, efforts to maintain water balance and good nutritional status, whether by oral or parenteral means, would seem to be of the utmost importance in the presence of diarrhea, hemorrhage, and infection

With these considerations in mind, the treatment of this syndrome can be outlined as follows

Very Severe Cases—In general, this includes cases in which upward of 600 r of whole body radiation was received There is no satisfactory method for treating patients who have received the certainly fatal doses of ionizing radiation which produce this form of the disease Nausea and vomiting appear in one or two hours, followed by prostration within the first 24 hours Before attributing such symptoms to severe radiation injury, however, one must rule out other types of injury as well as emotional disturbances that might produce similar symptoms but from which the patient might recover

Japanese experience indicated that these victims were very sensitive to physical activity, so that they should be given as much rest as possible as soon as possible They should not be transported long distances Treatment should emphasize fluid replacement and efforts to restore electrolyte balance and should include sedation when indicated There would appear to be no particular advantage in the use of antibiotics and blood transfusions in these persons merely on general principles On the other hand, when there are clear-cut clinical indications for their use, they should be employed

Severe Cases—In general, this includes cases in which in the neighborhood of 400 r of whole body radiation was received These persons need and profit most from good medical treatment Although in the absence of trauma and burns they do not require active care in the first few days, strenuous activities should probably not be permitted

Therapy should be directed at (1) restoration of water and electrolyte balance and maintenance of general nutrition, (2) control of infection, and (3) treatment for hemorrhage and anemia The diet should be bland and low in residue Intravenous fluids and parenteral alimentation should be given in the usual manner when indicated and when feasible, in an effort to maintain good nutritional status and to restore water and electrolyte balance in the presence of severe gastrointestinal symptoms Infection can be controlled, at least in part, by the use of antibiotics There is no reason to begin antibiotic therapy sooner than 48 hours after exposure unless required by wounds, burns, or infectious disease When there is little doubt that a victim has been exposed to several hundred roentgens, it is wise, if adequate supplies are available, to start oral maintenance doses of an antibiotic by the third or fourth day Once severe symptoms appear, combined oral and parenteral therapy should be instituted Beginning with several antibiotics at once has not been proved of value On the other hand, it may be necessary to use various combinations in certain cases

Sulfonamides are probably not drugs of choice in radiation injury However, if antibiotics are not available, they would undoubtedly prove lifesaving in certain instances

The only effective treatment for hemorrhage and anemia is replacement therapy by blood transfusion It would seem desirable, whenever possible, to maintain blood hemoglobin at a level of 10 gm or more per 100 cc

Moderately Severe and Mild Cases—In general, the treatment is similar to that suggested above, modified, of course, according to the clinical indications

ULTIMATE PROGNOSIS OF THOSE WHO HAVE SURVIVED SEVERAL HUNDRED ROENTGENS OF WHOLE BODY RADIATION

It is too early to write of the eventual outcome of the Japanese who recovered from radiation injury Radiation cataracts of varying severity have occurred in an appreciable number of those who were close enough to receive a significant amount of radiation It appears likely that the incidence of leukemia will be higher among the survivors than in the Japanese population as a whole There is enough information available now to warrant the statement that the survivors have regained their fertility and that, among the progeny of the survivors at Hiroshima and Nagasaki, no unusual incidence of abnormal offspring has occurred

COMMITTEE ON MEDICOLEGAL PROBLEMS

The Committee on Medicolegal Problems of the American Medical Association has approved the publication of the following report by Louis J Regan M D LL B

MALPRACTICE AND THE PHYSICIAN

The incidence of malpractice claims increased tenfold during the decade between 1930 and 1940 In some localities, malpractice claims have become so frequent that any patient with a less than perfect end result is a potential malpractice claimant If this alarming situation were evidence that the medical profession was becoming increasingly inefficient, then the solution would of course be obvious But the blunt truth is that the majority of all malpractice suits filed are without merit, more than half of them involve physicians who are above the median of their respective groups in skill, experience, and professional standing The search for a solution to this problem demands an understanding of what actually constitutes malpractice, an analysis of the causes of malpractice claims, and a universal knowledge among physicians as to the positive steps which may be taken to decrease both the relatively few justified claims and the preponderantly greater number of unjustified claims

ANY PHYSICIAN MAY BE SUED FOR MALPRACTICE

The bringing of a malpractice action does not even suggest that the claim has merit, for any patient may bring such an action against any physician who has attended him professionally Nevertheless, the practitioner who is the target of the accusation is damaged by the mere filing of the action Accordingly, it is necessary that every physician understand what constitutes malpractice under the law

WHAT CONSTITUTES MALPRACTICE UNDER THE LAW?

The law requires that a physician who undertakes to diagnose or to treat a patient must possess the skill and exercise the care commonly possessed and exercised by other reputable physicians in the locality If he holds himself out as a specialist, he must meet the standards of practice of the specialist in the designated field of practice These legal interpretations of his duty are not changed if the professional services are rendered gratuitously It follows, then, that no malpractice charge is justifiable unless the physician's service to the patient does not meet the requirements of good medical practice, unless in the diagnosis or treatment of his patient, the physician omits to do something he should do or does something he should not do in terms of accepted standards of practice The standard of practice is always determined by what other reputable physicians in the community, or in similar communities, would or would not do in the care of similar cases

This definition of standards needs further clarification for medicine is not an exact science, and not all patients who are given medical treatment get well Many are left with some disability or deformity There are few conditions in which there is available a sole, specific, universally utilized remedy or procedure There is frequently a great latitude for honest difference of opinion and often the attending physician must exercise his best judgment in deciding which of the several methods to adopt In certain circumstances, the physician's acts or omissions may be so unseemly and shocking as to be generally recognized as reprehensible and supportive of legal liability On the other hand, complications or untoward and unexpected results are not uncommon, and the mere fact that a patient is not cured or does not progress favorably does not suggest culpable ignorance or negligence on the part of the medical attendant

UNDER LAW, WHAT SKILL AND CARE HAS THE PATIENT THE RIGHT TO EXPECT?

In the absence of evidence to the contrary, the law presumes that a physician has exercised the ordinary skill and care required of him in treating his patient He is justified if his conduct of the case would be approved by even a respectable minority of his confreres in the same locality He may make a mistake in diagnosis or be guilty of an error of judgment, he may use medicines or methods of treatment different from those which some of his colleagues would have used, he may obtain a bad result instead of a satisfactory one but no one of these things is sufficient to fasten upon him the charge of malpractice Actionable malpractice consists in doing something that should not be done or in omitting to do something that should be done

MALPRACTICE SUITS LESSEN PUBLIC S CONFIDENCE IN MEDICAL PROFESSION

It is of primary importance, of course, that every physician familiarize himself with his legal interpretation of what does and what does not constitute malpractice But that is only the first part of the control of the malpractice contagion for experience has taught us that the most meticulous attention to the dictates of good medical practice is not sufficient to ward off unjust claims and that no physician, regardless of his excellence, is immune The misunderstanding, indeed the ill will, which has been engendered by the great number of unjust malpractice suits has tended to break down the public s confidence in the medical profession This situation has important and far reaching implications for both the public and the medical profession for the public interest is adversely affected when the physician in caring for his patient is forced to give thought, time, and energy to safeguarding himself against the possibility of an unjust malpractice claim The public should be informed of the facts of this problem, for in the long run it is the public—in the persons of individual patients—whose well being is being jeopardized There is no relationship outside the family which is so personal and intimate as that of physician and patient no relationship in which the character, integrity, and conscience of one party are so important to the well being of the other The overwhelming majority of physicians faithfully and unselfishly meet the demands and obligations of their calling, and the majority of patients do not unjustly file malpractice suits. The acts of the ignorant, the greedy, the callous few—among either patients or physicians—must not be permitted to destroy the merited esteem in which the profession as a whole is held.

HOW MUCH SHALL THE PHYSICIAN TELL HIS PATIENT?

As a basic step in improving the situation, the physician must realize that at all times he is obligated to act with the utmost good faith toward his patient. Thus, if he knows that he can not accomplish a cure or that the treatment adopted will probably be of no benefit, he is duty bound to advise his patient of these facts. It is extremely doubtful that a physician has a therapeutic privilege to withhold a specific diagnosis from a patient who is sick with serious or fatal illness. To the contrary, the confidential relationship requires in ordinary circumstances that the physician make a frank and full disclosure of all the pertinent facts to any adult and mentally competent patient. Such completely open handling of a case would do much to improve the physician-patient relationship and to remove the possibility of unjust malpractice actions. However, there are other unavoidable and even psychological factors in the practice of medicine which must also be considered carefully in this respect.

FACTORS THAT PROMOTE MALPRACTICE SUITS

If physicians were always able to obtain perfect results there would be, of course, no malpractice actions. But deaths, untoward and unexpected results, continuing disabilities, and complications occur and will continue to occur. Whether or not the uncured patient brings an action is often determined by his feeling toward the physician. Patients who have a feeling of friendly trust for the physician and who believe that everything possible has been done for them are not so likely to sue for malpractice—even when bad results ensue. Malpractice suits more often arise if the patient is resentful of some fancied or actual affront, if he believes that he has not been sufficiently closely attended, or—above all—if some third person raises a doubt in his mind as to the propriety of the treatment. In regard to this last point, it would be sheer folly to assume that the 'third person' is always—or even most often—a layman who is uninformed about the facts of the case. Regrettably, many of these people are physicians who are also uninformed about the details and facts but who precipitate unjustifiable suits by criticising directly or by implication the work of physicians who have cared for particular cases.

Another potential danger to the physician-patient relationship arises from the physician's lack of attention to certain elements of patient psychology as factors in malpractice causation. Although the patient is sick or injured when he comes to his physician, he nevertheless visualizes himself as he was prior to becoming sick—with his body structures intact. Thus, unless the physician understands this viewpoint and prepares the patient properly, the patient with a fracture, for example, is likely to compare the final result with the part prior to injury, not with the injured member as presented to the physician. As another example of patient psychology, the average patient is not disposed to understand an error in diagnosis or the failure to make an early diagnosis. Or again, the unwarned patient is not happy with the surface tissue changes which are sometimes associated with deep x ray therapy.

An analysis of malpractice claims reveals the significant fact that they arise almost invariably out of the first course of treatment. In other words, it is rare indeed that an old patient instigates a suit against his physician. It is obvious, then, that from the very first contact—indeed, especially with the very first contact—the physician should do everything within his power to develop an honest, frank, and psychologically sound relationship with his patient.

HOW PHYSICIANS MAY SAFEGUARD THEMSELVES AGAINST MALPRACTICE SUITS

The foregoing discussion has analyzed what malpractice is and what can be done in the physician's conduct to avoid real malpractice or to forestall the filing of an unjust claim. But it would be completely unrealistic to assume that any course of conduct on the part of the physician would prevent his being unjustly sued for malpractice. Good medical practice in itself is not enough, the physician must be able to defend his actions by proof of what he has done. He must not only know his legal duty to his patient, but he must fulfil it. He must know and take advantage of every measure to protect himself against the unjustified claim of malpractice. Under present circumstances, it is absolutely foolhardy for any physician to be ignorant of or careless of malpractice prophylaxis. He must take positive actions carefully based upon his legal responsibilities and liabilities.

To begin with, a physician is not legally obligated to undertake the care of any patient. But from the time he assumes the responsibility until he is discharged or withdraws from the case, he must give—or be sure that there is given—the care and treatment required by the condition of the patient. Before a physician may, without legal liability, withdraw from a case he must give reasonable notice of his intention and allow the patient reasonable opportunity to fill his place.

By notice or special contract, the physician may limit the service he is to render. He may agree to treat the patient only at a certain place, or for a limited time, or for certain conditions. On the other hand, he may increase his obligation by expressly agreeing or warranting that he will effect a particular result, in this circumstance, he will be liable on his contract or warranty if he fails to fulfil the agreement. A physician is not an insurer of results unless he makes himself one by his special promise.

Many malpractice actions are brought as the result of some unwise statement made by the attending physician, or his partner, assistant, or office nurse, to the patient or to a friend of the patient. Care should be taken to avoid making any remark constituting an 'admission' of fault, or one which may be construed as such. It is understandable that such remarks have been made under emotional stress or when exercising 'hindsight' in the face of an unsatisfactory result even when good practice has been followed throughout. A single careless statement might create liability for damages where actually no liability exists. The effect of such a remark when reported to a jury is incalculable and almost impossible to counteract. Further, an admission on the part of the defendant may free the plaintiff from the necessity of offering medical expert testimony.

EXPERT TESTIMONY AND RES IPSA LOQUITUR

Generally, the proof of a physician's negligence must be established by the testimony of medical expert witnesses. The application of the doctrine of *res ipsa loquitur*[1] in a case gives rise to an inference of negligence on the part of the defendant, and relieves the plaintiff of the necessity of proving the alleged malpractice by the testimony of experts. It places on the defendant the burden of making explanation, if he can, to offset the inference of negligence and by the majority rule a question is created for the jury, regardless of any and all evidence presented by the defendant.

The doctrine of *res ipsa loquitur* has been held applicable in the field of malpractice chiefly in cases which involve (1) slipping instruments, (2) sponges left in the tissues, (3) burns from heating modalities, (4) roentgen radiation injuries, generally limited to cases wherein the roentgen ray is being used diagnostically, (5) infection through the use of an unsterilized needle or instrument, and (6) injury to a portion of an anesthetized patient's body outside the field of treatment or operation.

A GOOD CASE RECORD IS A VALUABLE SAFEGUARD

The importance of good medical case records as a factor in malpractice prophylaxis can not be overestimated. A good medical case record should contain a history[2] of the case and a physical examination of the patient, together with reports of all indicated laboratory studies. These data constitute the foundation of the medical record and will generally serve as the basis for at least a working diagnosis. If diagnosis is not possible, consulta tion is desirable Consultation reports must be in writing Thereafter, a good record will reflect (by means of progress notes) a *sequential history of the case*, its course, complications, and sequelae and, thus, the justification for further or changed investigation and treatment Such a record will contain a statement of all treatment rendered in the case Copies of special forms and of reports used or made in a particular case are also a part of a good record It is desirable that an attending physician ask himself from time to time what he would wish to have in the record of the case under treatment in the event he should later be called upon to justify in court his conduct of the case If a patient discontinues treatment before he should or fails to follow instructions, the record should show it A good method is to file a carbon copy of the letter sent to the patient advising him against the unwise course [3]

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[1] *Res ipsa loquitur* (literally, the thing speaks for itself) is a doctrine of the general law of negligence. It is held applicable whenever one person is injured by an instrumentality entirely in the control of another person, the use of which does not ordinarily result in injury if the person in control exercises due care.

[2] It is important to indicate the source of the medical history (from the patient, member of family, etc).

UNWARRANTED PROFESSIONAL CRITICISMS PROMOTE MALPRACTICE SUITS

The precipitating cause of a majority of all malpractice actions is found in the unwise comments or criticism of physicians with regard to treatment given to patients by other physicians Commonly it is criticism by a succeeding physician of the work of his predecessor Various authorities have estimated that 50 to 80 per cent of all the suits for malpractice would be eliminated if such destructive criticism could be stopped It is profitless to attempt to determine why physicians are so prone to criticise destructively and unethically, but the results of it are deplorable Legitimate criticism rests only on full knowledge of the facts as gathered from all parties, from the physician who treated the patient, as well as from the patient

OTHER PREVENTIVE PRECAUTIONS

The importance of tact can hardly be overemphasized It should be manifest especially in the handling of the patient and the patient s family, in the avoidance of fee disputes and unwise efforts and methods in the collection of fees (considering the provisions of the statute of limitations), in the avoidance of overoptimistic prognoses and especially of any promise constituting a guarantee of a particular result, in the avoidance of betrayal of privileged communications, in the avoidance of making any statement constituting (or which might be construed as) an ' admission ' of fault or negligence, in the avoidance of any reference to malpractice insurance protection, and in the securing of legal advice before making any statement in regard to a malpractice claim or suit

LIABILITY FOR ACTS OF OTHERS

In addition to being responsible for his own acts and omissions, a physician encounters, in his everyday practice, instances in which he may also be responsible for the negligent acts and omissions of others Thus, he is responsible for the acts of his assistants and employees, for their negligence occurring during the course of their employment Where doctors practice as partners, each partner is liable not only for his own acts and those of his partner, but for the negligent acts of any agent or employee of the partnership

When two independent practitioners are caring for a patient, each is liable not only for his own acts but for doing nothing about the negligent acts of the other which he has observed or which in the exercise of ordinary diligence he should have observed

The attending physician is generally not liable for the negligence of an interne, a nurse, or other hospital employee He is, however, responsible for the acts of the hospital personnel in so far as they are carried out under his immediate supervision and control Thus, the operating surgeon and not the hospital is held liable for any negligence of operating room attendants during the performance of surgery

CONSENT FOR OPERATIONS, TREATMENT AND AUTOPSIES

Consent for operation must always be secured Any adult in a clear state of mind may authorize operation upon himself Oral consent might be considered sufficient, but because of the difficulty in proving that it was given, the physician should invariably require a witnessed consent in writing If the patient is a minor (that is, a person under the age of twenty-one) consent is to be obtained from parent or guardian [4] If the individual is mentally incompetent, the consent of the one who stands in the position of guardian is required

When an operation is made compulsory by law (such as vaccination or sterilization [5]) the law furnishes the consent. If an operation is unlawful, consent to the performance thereof does not absolve the surgeon from liability

In an emergency which demands immediate action for the preservation of the life or health of a patient and in which it is not practicable to obtain his consent or the consent of any one authorized to speak for him, it is the duty of the attending physician to perform without consent such operation as good surgical practice demands [6]

If sterility is likely to result from the surgery which is contemplated, explanation of that probability should be made and a signed authorization obtained from both spouses It should be borne in mind that it is hazardous to sterilize any person except upon a positive medical indication Further, there should be no promise or guarantee that the patient will be sterilized as the result of the procedure undertaken.

The individual physician must secure consent to perform a postmortem examination This, too, should be in writing [7] and sufficiently comprehensive to allow the removal and taking away of tissue if such is to be done.

The trend of the cases in recent years indicates that it is extremely unwise to pursue a course of treatment in itself hazardous or capable of producing harmful effect without securing a written statement from the patient, or from someone legally responsible for the patient—a statement which clearly expresses understanding of and consent to the special treatment.

FAILURE TO USE RECOGNIZED DIAGNOSTIC AIDS

There are a large number of malpractice actions in the law reports which may be classified under the general heading of ' Insufficient Treatment Cases " In every field of medical practice there are cases illustrating "insufficient care the failure to make a blood count, a Wassermann, a pregnancy test, a culture, a smear, a urinalysis, a stool examination, an x-ray, original or follow up, failure to make a complete diagnosis or overlooking a reasonably determinable condition, failure to utilize an indicated prophylactic measure (diphtheria, tetanus, etc), the failure to give instructions, to follow up the original treatment or operation, to institute measures to protect contacts, etc, etc

Failure to use the x ray at all, or failure to make sufficient use of the x ray, has been the chief allegation in many malpractice actions Whenever a fracture is present which was not diagnosed and no x-rays were taken, the conduct of the attending physician is likely to be condemned as not coming within the standard of good practice [8] Whenever a bad result, deformity or limitation of motion occurs, the defense is immeasurably strengthened by the possession of a series of x rays taken at intervals during the progress of the case Whenever a patient refuses to have an x ray made, the physician should fortify himself with the strongest written evidence X-ray records, as well as the entire case record, should be carefully preserved beyond the time during which a malpractice action may be brought

The statute of limitations provides the period of time after which specified actions may not be brought The time provided varies greatly in the several states A physician should wisely inform himself of the situation in his own state

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[3] There is a legal presumption that a letter mailed has been received by the addressee but there is no presumption that a letter has been mailed

[4] Statutory exception In California a female of the age of 18 or more who is or has been married is an adult for the purpose of this consent.

[5] Under Eugenic Sterilization Statutes

[6] 48 C. J 1131 Jackovach v Yocum (Iowa) 237 N W 444

[7] In California and several other states it is criminally illegal for any person to perform an autopsy without having first obtained the written authorization of the coroner or other authorized public officer or of the person who has the right of disposition of the body

[8] The failure to make use of x ray as an aid to diagnosis in cases of fracture amounts to a failure to use that degree of care and diligence ordinarily used by physicians of good standing in the community and the court, in absence of expert testimony may take judicial notice of such fact. Agnew v City of Los Angeles (Cal) 218 Pac. (2d) 66

OBLIGATIONS TO PATIENTS

To summarize, the physician who would understand his legal obligations, responsibilities and duties to his patient, must constantly bear in mind the following fundamental obligations

1 The physician must possess the degree of skill commonly possessed by other reputable practitioners in the same field of practice

2 He must exercise the degree of care, diligence, and judgment commonly and ordinarily exercised by other reputable members of his profession in similar circumstances

3 He must keep abreast of progress and follow good practice, common practice, in diagnosis and treatment, he must not experiment

4 He must not neglect or abandon his patient, he must proceed diligently, without unnecessary delay

5 He must give his patient sufficient attention and must utilize the indicated diagnostic aids

6 He must find or anticipate any condition reasonably determinable or reasonably likely to develop

7 He must obtain legal consent to operate and to perform an autopsy

8 He must give proper instructions (that is, instructions consistent with the standard of practice) for the care of the patient in his absence, and for the protection of those coming in contact with the patient

9 He must fulfil the terms of a special contract if he makes one

The foregoing directions for reducing and avoiding the instigation of malpractice suits will not, of course, guarantee that a physician will not be sued unjustly for already malpractice may be regarded as a contagious disease of the social body There are several major reasons for this condition, but two are paramount. (1) the winning of a suit inevitably encourages the filing of others as patients become increasingly suit conscious , and (2) such suits are difficult to defend and the knowledge of how best to conduct such a defense is not sufficiently widespread The inter-relationship of these two points will be obvious, for each successful defense of an unjust suit will serve as a discouragement to the filing of others But the second of these causes of high malpractice incidence—the difficulty of conducting a defense—is dangerously enlarged by many physicians themselves Large numbers of medical men are naive enough to believe that their patients would never file such suits and that no precautions need be taken, and yet such precautions are the only assurance of the best possible defense in the event of a suit The most vulnerable physicians are those who know that they are maintaining at least an average standard of practice and who are therefore (and blindly) assuming that they will not be sued This discussion is concerned with *unjust* claims no doctor who is actually guilty of malpractice should be allowed to go free of penalty Meritorious claims should be settled out of court—preferably before a suit has been filed

PROMPT ATTENTION SHOULD BE GIVEN TO CLAIMS

Another too frequent hindrance to an adequate defense is delay in the investigation of claims, such delay is highly disadvantageous to the preparation of a defense As a final word of warning that the physician may need every available precaution, one must consider the conditions under which most cases are heard They are tried before juries made up of lay persons, and it is a truism that no one can say what a jury will do This is particularly true of malpractice cases, for certainly lay jurors can not be expected to understand complex medical facts How does a jury arrive at a decision when two expert witnesses testify that the defendant s conduct of the case did not meet the required standard, and two others declare that what the defendant did was consistent with the usual and ordinary practice in the community?

To physicians who have had little or no experience with the law and to lawyers who have little or no medical knowledge, the problem of adequately defending the unjust malpractice case seems insurmountable And it is true that far too many such cases have been lost simply through poor defense This is an aspect of the problem which needs a great deal more attention particularly in areas which have become virtual hot beds of nonmeritorious malpractice claims At all times and to all physicians, there should be available expert advice on problems relating to the physician patient relationship [9] Whenever a threat is made against a physician, a carefully prepared procedure should be put into effect Unjustified claims should be contested as thoroughly as possible In such cases it is sheer folly to compromise, on the theory that a slight settlement would be less expensive than the cost of defense Such a course simply serves as an encouragement to others whose claims are not justified This shortsighted view is largely responsible for the rapid increase in the number of malpractice claims in some sections of the country If cases based upon unjust or absurd claims are permitted to receive even a slight profitable return, there will be an incentive to bring more of them

BE SLOW TO COMPROMISE

It is a great temptation to a doctor to rid himself of a nuisance claim by making a small settlement The unfavorable publicity, the loss of time, and the mental and emotional strain involved in defending a malpractice suit may lead the physician to compromise But, as is so often true, the easiest way out of a situation is seldom the best For the sake of both himself and his colleagues, the doctor should make a determined opposition to an unjustified claim

A LIST OF COMMANDMENTS' IN MALPRACTICE PREVENTION

In the final analysis, it is the physician himself who is responsible for the continuing existence of the vicious malpractice situation The physician has generally been satisfied to pay his professional liability insurance premiums and thereafter to sit back complacently doing nothing until he becomes a target for a malpractice claim He must be brought to realize that his money payment is only a part of his insurance premium, a much more important part is his contribution of time, of study, and of putting into effect all possible measures to safeguard himself and his colleagues

Prevention is the best defense against malpractice Listed below are the 23 malpractice prophylaxis commandments'

1 The physician should care for every patient with scrupulous attention to the requirements of good medical practice

2 The physician must know his legal duty to the patient

3 The physician must avoid destructive and unethical criticism of the work of other physicians

4 The physician should keep ideal" medical records in every case records that would be presentable when offered in court, records that clearly show what was done and when it was done records that clearly indicate that nothing was neglected and that the care given met fully the standard demanded by the law If any patient discontinues treatment before he should, or fails to follow instructions, the record should show it a good method is to file a carbon copy of the letter which advises the patient against the unwise course

5 The physician should be careful to avoid making any statement which constitutes or which might be construed as an admission of fault on his part Such an admission, which is usable against the physician might be made to a third party as well as to the patient at any time before the trial Such an admission may be made by an agent or employee of the physician during the course and within the scope of the employment It is important to instruct employees to make no statements

6 The physician should exercise tact as well as professional ability in handling his patients A proper professional manner and a sound attitude should be maintained at all times toward both the patient and the patient's family The attentive physician may early sense some unsatisfactory and disturbing under-current which, by the institution of protective measures, may be prevented from developing into something much more unpleasant Thus, if the patient is not doing well, consultation may be suggested, if the patient is dissatisfied or complaining, or if the family s attitude indicates dissatisfaction, consultation should be demanded The use of a consultant affords, in any case, great protection against a malpractice claim

7 The physician should refrain from overoptimistic prognoses and should avoid promising too much to the patient

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[9] Regan L J Doctor and Patient and the Law St. Louis The C. V Mosby Company 1949 chap 20

8 The physician should advise his patients of any intended absence from practice and should recommend, or make available, a qualified substitute

9 The physician should unfailingly secure written consent for operation and for autopsy

10 The physician should carefully supervise assistants and employees and take great care in the delegation of duties to them

11 The physician should have some knowledge of the statute of limitations and of its significance

12 In his selection of patients the physician should limit himself to such fields as are well within his qualifications He should keep abreast of progress in the medical profession

13 The physician should keep inviolate all confidential communications

14 The physician should frequently check the condition of his equipment and make use of every available safety installation

15 In the treatment of the patient the physician must not experiment

16 The physician must be careful to render sufficient care to his patient in general instructions, frequency of visits, clinical and roentgen ray laboratory investigations and the like Moreover, every precaution should be instituted for the protection of those caring for the patient and of all other contacts

17 The patient must not be abandoned The physician-patient relation can be terminated without liability only in certain ways and under certain conditions

18 The physician should never reveal that he carries professional liability insurance Except on the recommendation of his legal adviser, he should never write a letter or make any statement with reference to a malpractice claim Immediately on being advised of even the possibility of suit, he should consult with his attorney

19 The physician should arrive at an understanding in the matter of fees Misunderstanding in this matter, particularly when the question of excessive fees arises, contributes an avoidable element of risk

20 The physician should secure legal advice if he is called to attend a coroner s inquest as a witness in a case in which he has been in professional attendance

21 The physician should realize that because of the possibility of error in transmission, it is dangerous to telephone a prescription

22 The physician should realize that it is hazardous to sterilize any patient except when a medical indication exists

23 Except in actual emergency, the physician should not examine a female patient unless a third person is present There is no more serious or destructive charge than that of undue familiarity, and the only way to avoid claims of this sort seems to be to have some one else present during all examinations

CONCLUSIONS

There must be recognition of malpractice as a problem, that the conditions created by it are harmful to the physician and injurious to the public, and that action must be taken to correct it

The public should be informed as to (1) what constitutes malpractice, (2) how really few cases of actual malpractice occur, and (3) the major degree of responsibility which the individual has in the maintenance of his own health

Physicians must learn what they may do to safeguard themselves, and must put into effect every possible precaution against an unjust malpractice accusation

ADDENDA

I CONSENT TO OPERATION

Place
Date

1 I hereby authorize and direct Dr
to perform the following operation upon me

and to do any other procedure that (their) (his) judgment may dictate during the above operation

2 I understand that the surgeon (surgeons) will be occupied solely with the surgery and that the administration and maintenance of the anesthesia are independent functions and will be in charge of Dr I consent to the administration of such anesthetic or anesthetics as Dr may deem advisable in my case

3 It has been explained to me that I may be sterile as a result of this operation although no such result is warranted or guaranteed I understand what the term sterility means and in giving my consent to the operation I have in mind the possibility (probability) of such a result

A M Signed
Hour P M Witness

4 I join in authorizing the performance upon my (husband) (wife) of the surgery consented to above It has been explained to me that as a result of the operation my (husband) (wife) may be sterile[1]

Date Signed
A M Witness
Hour
P M

1 Cross out paragraphs not applicable to particular case

II CONSENT TO OPERATION UPON MINOR

Place
Date

1 I (we) being the parent(s) guardian custodian of a minor of the age of do hereby authorize and request Dr to perform such surgical operation on the person of said a minor as the judgment of said Dr may dictate

2 I (we) also authorize and request the employment of such anesthetic or anesthetics as may be deemed suitable in the judgment of the said Dr or in the judgment of the anesthetist selected to administer the anesthetic or anesthetics in this case[2]

2 A similar consent form may and should be used in the case of a patient who is incompetent signed by guardian custodian or other person legally responsible for the incompetent

A M Signed ( )
Hour P M
Witness

III. CONSENT TO OBSERVERS AND/OR PHOTOGRAPHS AND/OR TELEVISING

In the interests of science and the furtherance of medicine I the undersigned do hereby consent to and authorize Hospital and the Operating or Treating Surgeon and such doctors as may be assisting him to examine and operate or treat me in the presence of other than the usual surgical staff.

I further authorize and consent to the taking of photographs and such subsequent use thereof as may be deemed *advisable by said* hospital and/or doctor or doctors

I further authorize and consent to the televising of any operative or other procedure performed or carried out upon me

Dated Signed
Witness Witness

IV PATIENT FAILS TO CARRY OUT ADVICE

Note When a patient neglects or fails to carry out advice it is desirable to have the facts established in writing It may be wiser to withdraw from the case (See VII) This is a matter for the judgment of the physician in the particular case

SAMPLES[3]

3 Substance of letter to patient to be changed to fit the particular facts and circumstances Carbon copy with proof of mailing of original written thereon to be filed with medical case record

Place
Date

A

Name of Patient
Address
Dear *Mr*

At the time of my examination of your ankle this afternoon I advised you of the desirability of having x rays made This you refused to do

Upon your insistence that I treat your ankle and foot without benefit of x rays, I agreed to do my best in the circumstances but as I advised you this afternoon and must repeat now I cannot establish without x rays whether or not you have incurred a fracture

In your own interest I urge that you have an immediate x-ray study made of your foot and ankle

Yours very truly

B

Dear Mrs

Upon the history you gave me and my findings on examination, both of this date I am not able as I told you at the time of your visit, to rule out pregnancy as the cause of the vaginal bleeding of which you complain

You have told me that you will not submit to a pregnancy test. I again now advise you of its desirability I hope you will come in tomorrow morning prepared as I instructed you to have the test made If you continue to refuse to submit to this test, it will be necessary to have a consultant see you tomorrow if I am to continue to advise you

Yours very truly

C.

Dear Mrs

When in response to your call today I saw your husband at your home I told you my opinion was that he is very seriously ill with pneumonia and that he should be immediately hospitalized You refused to permit me to have him removed to the hospital I told you that I am willing to do the best I can for him under the circumstances but that he could be better cared for and he would be safer with less likelihood of complication in the hospital

Your husband s condition is such that the matter cannot be discussed with him so I hope that you will now after giving the matter more thought authorize his removal to the hospital.

Yours very truly

D

Dear Mrs

You brought your seven year old boy in today for me to see He has a deep penetrating wound on the sole of his foot apparently resulting from his stepping on a nail You thought that it had been received in a neighboring stable

I advised you that the boy should immediately be given an injection of tetanus antitoxin You refused to permit me to administer this to him stating that you had heard of two children who had severe reactions following such prophylactic treatment

I told you that I would make a preliminary test which would warn us of the likelihood of severe reaction but that I could not guarantee that result or any result You reiterated your refusal

I cannot give the boy this treatment or any treatment without your consent I urgently recommend that you permit me or some other physician of your choice to administer a preventive dose of tetanus antitoxin to your boy without further delay

Yours very truly

V PATIENT FAILS TO KEEP APPOINTMENT

SAMPLES[4]

4 When a patient fails to keep an appointment or discontinues treatment before he should it is desirable to send him a letter incorporating the pertinent facts and the recommendations File a carbon copy endorsed with a certificate of mailing with medical case record Registered mail may be used

Place

Date

A.

Name

Address

Dear Mr

My records indicate that you failed to keep your appointment of (date) and that you have not made any subsequent appointment or appearance in the office

In your own interest may I call to your attention the fact that further professional attention is in my opinion definitely needed If there is some reason why you prefer not to return to this office I urge that you immediately seek other competent professional care I shall be glad to give the benefit of my knowledge of your case to your subsequent physician should you elect to receive the needed attention at other hands

Yours very truly

B

Dear Mrs

You have not returned as arranged since at your request, I examined you on last Friday

The history you gave of spotting between periods over the last several months and my findings on examination which I related to you are of such significance that as I endeavored to impress upon you when I made an appointment for you to return with your husband I must urge upon you the advisability of having immediate medical attention

If you do not wish to return to me you should consult another physician at once

Yours very truly

C

Dear Mrs

You failed again today to appear in accordance with your appointment at the Radiologist s office so that a check-up x ray could be made of your fractured wrist

I have previously urged upon you the necessity of having your cooperation to improve the likelihood of a favorable result.

You should not be heard to complain of the end result if it is not satisfactory when you refuse or neglect to follow the advice of your physician

I now request that you appear at my office at ten o clock tomorrow morning. I am arranging to have x rays made at that time and to have a specialist in orthopedic surgery see your arm

Yours very truly

VI PATIENT DISCHARGES PHYSICIAN FROM CASE[5]

5 If a physician justifies his failure to continue in attendance upon a patient upon either his having withdrawn from the case or of having been discharged by the patient the burden of proof of such contention is upon him—hence the desirability if not the actual necessity of having written evidence available

Dear Mr or Mrs

This is confirmation and my acknowledgment, of the fact that you have as of this date discharged me from further professional attendance upon you in your current illness

Should you desire I shall be glad to cooperate with the physician you now call in supplying him with such information as I have gained in respect to your case

Yours very truly

VII PHYSICIAN WITHDRAWS FROM CASE

Note A physician may withdraw from attendance upon a patient but he must give reasonable notice of his intention to do so and must allow the patient reasonable time and opportunity to fill his place If the fact whether a physician did withdraw from professional attendance upon a patient became an issue in the case the burden of proof falls upon the physician For this reason it is desirable that written evidence be available

It is a serious question of judgment whether when a patient fails to cooperate or refuses to follow advice the physician should continue on the case It is recommended that if the physician decided to continue to care for an uncooperative patient a patient who for example refuses to have an indicated x ray study made he should demand and require consultation

SAMPLES[6]

6 Letters should be sent and carbon copy filed The wording should be simple and direct but the intent and meaning must be clear and certain

Place

Date

A

Name

Address

Dear Mr

You have repeatedly failed to follow my advice and recommendations

I am therefore advising you of my intention to withdraw from further professional responsibility in connection with your case To allow you a reasonable opportunity to secure another physician I shall be available at your request to render you service for three days from your receipt of this letter but not thereafter In this period of time in this community of several hundred physicians you can readily fill my place

I shall be glad to give to any reputable physician of your choice the benefit of such knowledge as I have gained of your case

Yours very truly

B

Dear Mr

You consulted me this afternoon in connection with an injury to your foot and ankle At that time upon your refusal to have x rays made of the injured area I advised you that I could not undertake to render professional service to you

So that there may be no misunderstanding I am confirming these facts in writing

Yours very truly

C

Dear Mrs

As I told you this morning I cannot longer continue to be professionally responsible for the care of your little boy This decision is necessitated by the fact that you have repeatedly refused to permit me to make the detailed and thorough study of his condition which I regard as indicated and vital

Please secure other medical attention at once In the meantime and for a reasonable time I shall remain available at your request to render any routine or emergency service that may be required

I shall of course be glad to offer to Tommy s new physician the knowledge of his case which I have been permitted to acquire

Yours very truly,

D

Dear Mrs

You failed to keep your appointment this week

At the time you received your injection last week a portion of the needle broke off in your tissues You were at once advised of this accident. As I told you after preliminary search I was unable to recover the broken piece without anesthesia and incision, and recommended that localization studies be made prior to undertaking definitive search

I again recommend that procedure and will make arrangements at your request and responsibility

Yours very truly

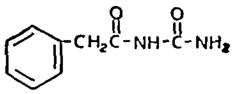
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies A copy of the rules on which the Council bases its action will be sent on application

R T STORMONT, M D, *Secretary*

Phenacemide —Phenurone (Abbott) —$C_9H_{10}N_2O_2$ —M W 178 19 —Phenylacetylurea —The structural formula of phenacemide may be represented as follows



Actions and Uses—Phenacemide is a synethetic anticonvulsant with only minor sedative action In experimental animals the drug shows effectiveness against electroshock seizures and convulsions produced by pentylenetetrazole Large doses produce marked ataxia and loss of reflex activity Studies in animals also indicate that the liver plays a major role in the destruction of the drug

Phenacemide is used in the treatment of pyschomotor epilepsy, grand mal and petit mal epilepsies and in the management of mixed seizures *The drug has serious side effects Personality changes (including attempts at suicide and toxic psychoses), hepatic damage and bone marrow depression, as evidenced by leucopenia and aplastic anemia, have followed administration of the drug It should be employed only by physicians experienced in the treatment of epilepsy and only in patients whose seizures are difficult or impossible to control with other recognized anticonvulsants*

Phenacemide should not be employed in patients with evidence of liver dysfunction and should be used with caution in patients with histories of personality disorders or sensitivity to drugs It may be advisable to hospitalize such patients for observation during the first weeks of treatment Psychiatric signs such as withdrawal and loss of interest indicate onset of serious personality changes Careful clinical observation throughout the course of therapy is especially important during the first six months, the physician must be constantly alert for such symptoms as anorexia, nausea, vomiting general malaise, fever rash or jaundice, as they may be early signs of liver damage or blood dyscrasia Anorexia, nausea and vomiting may be due to only gastrointestinal distress, but if persistent may be of more serious significance Patients should be instructed to report such signs immediately Blood counts and liver function tests should be made on all patients preliminary to and regularly during treatment

Dosage—Phenacemide is administered orally and the dose determined according to the response of the patient and the degree of control already obtained with other anticonvulsant agents It may be given in conjunction with phenobarbital, diphenylhydantoin sodium, trimethadione or paramethadione It is recommended that when some control has been achieved with other medication, this should be continued and phenacemide added at a dosage of 0 5 gm three times daily with meals The dose should be increased gradually to the minimum required for adequate control or until limiting side effects develop The action of an average dose appears to last for three to five hours If control by phenacemide alone is anticipated, other medication can be reduced, but if a combination of phenacemide with other drugs permits better control, or allows control with lower dosage of phenacemide or less disturbing side effects, the combination of medication should be continued Doses as small as 0 25 gm three times daily may be adequate in some cases The average total daily adult dose seldom exceeds 2 to 3 gm For children 5 to 10 years of age, approximately half the adult dose is recommended The maintenance dose should be the smallest amount which will adequately control seizures Personality disturbances, signs of liver damage, rash or depression of the blood count, particularly of erythrocytes and polymorphonuclear leucocytes, are indications for withdrawal Cautious reinstitution of therapy may be considered when improvement occurs

Tests and Standards—

Physical Properties Phenacemide is a white to creamy white odorless tasteless crystalline solid It melts between 212 0 and 216 0 C. It is slightly soluble in alcohol benzene chloroform and ether; and is very slightly soluble in water

Identity Tests To 5 mg of phenacemide in an evaporating dish add 2 ml of 1% potassium nitrate in sulfuric acid Heat the mixture on a steam bath for 30 min. then add 10 ml of water and 0.2 gm of zinc dust Heat the mixture on a steam bath for 30 min Cool dilute to 25 ml. and filter Transfer 1 ml of the filtrate to a test tube add 1 ml of 20% toluenesulfonic acid 8 ml of water and 1 ml of 0 1% sodium nitrite and allow the mixture to stand 3 min. Add 0 5 ml of 0 5% sodium sulfamate and allow the mixture to stand 2 min Finally add 5 ml of 1 250 N,N-dimethyl 1-naphthylamine in alcohol and allow the mixture to stand 15 min. the solution becomes light purple

Using about 0 4 gm of phenacemide, prepare phenylacetic acid as directed in the assay through, 'Evaporate the extract to dryness blow off the last traces of chloroform Recrystallize the residue from water and dry it over phosphorus pentoxide in a vacuum for 24 hours the phenylacetic acid obtained melts between 75 0 and 77 0 C

Purity Tests Dry about 1 gm of phenacemide accurately weighed for 4 hours at 105 C. the loss in weight is not more than 1 0%

Ignite about 1 gm of phenacemide accurately weighed the residue is not more than 0 05%

Assay (*Phenylacetic Acid*) *Transfer about 0 4* gm of phenacemide accurately weighed to a 100 ml round bottomed flask. Add 50 ml. of water and 8 ml of sulfuric acid and reflux the mixture for 1 hour on a hot plate Transfer the contents of the flask to a 250 ml separatory funnel and wash the condenser and flask with three 15 ml portions of chloroform Add the washings to the separatory funnel and extract the phenyl acetic acid first with the combined chloroform washings (45 ml) and then with five 20 ml portions of chloroform Filter the combined chloroform extracts through cotton and wash the filter thoroughly with 20 ml of hot chloroform Evaporate the extracts to dryness, blow off the last traces of chloroform and dissolve the residue in 25 ml of alcohol Titrate the solution with 0 1 *N* sodium hydroxide using phenolphthalein T.S as an indicator Each milliliter of 0 1 *N* sodium hydroxide is equivalent to 0 01361 gm of phenylacetic acid and 0 01782 gm. of phenacemide The amount of phenylacetic acid present is not less than 74 9 nor more than 77 9% equivalent to not less than 98 0% nor more than 102 0% of phenacemide

Dosage Forms of Phenacemide

TABLETS *Identity Tests* Using an amount of crushed tablets equivalent to about 0 4 gm of phenacemide prepare phenylacetic acid as directed in the assay through Evaporate the extract to dryness blow off the last traces of chloroform Recrystallize the residue twice from water and dry it over phosphorus pentoxide in a vacuum for 24 hours the phenylacetic acid obtained melts between 75 0 and 77 0 C

Assay (Phenylacetic Acid) Weigh 20 tablets and grind them Accurately *weigh the equivalent of* about 0 4 gm of phenacemide and transfer it to a 100 ml round bottomed flask. Proceed as directed in the assay for phenylacetic acid in the monograph for phenacemide starting with *Add* 50 ml of water and 8 ml of sulfuric acid The amount of phenacemide present is not less than 95 0% nor more than 105 0% of the labeled amount.

Tablets Phenurone 0 5 gm U S Trademark 522,257 Abbott Laboratories, North Chicago, Ill

Aminophylline U.S.P (See New and Nonofficial Remedies 1951, p 297)

Solution Aminophylline 10 cc and 20 cc ampuls A solution containing 25 mg of aminophylline in each cubic centimeter Testagar & Company, Inc, Detroit

Solution Aminophylline with Benzyl Alcohol 2% 2 cc ampuls A solution containing 0 25 gm of aminophylline in each cubic centimeter Testagar & Company, Inc, Detroit

Calcium Levulinate-N.F (See New and Nonofficial Remedies 1951, p 408)

Solution Calcium Levulinate 10 cc ampuls A solution containing 0 1 gm of calcium levulinate in each cubic centimeter The S E Massengill Company, Bristol, Tenn

Chorionic Gonadotropin (See New and Nonofficial Remedies 1951, p 359)

Lyophilized Chorionic Gonadotropin 10 cc vials containing 5,000 I U Powdered preparation of chorionic gonadotropin which, when diluted with the accompanying 10 cc (vial) of sterile distilled water containing 0.5% phenol, makes a solution having a potency of 500 I U in each cubic centimeter U S Patent 1,910,298 B F Ascher & Company, Inc, Kansas City, Mo

Dihydroxy Aluminum Aminoacetate (See New and Nonofficial Remedies 1951, p 311)

Tablets Robalate 0 5 gm A H Robins Company, Inc, Richmond, Va

Heparin Sodium U.S P (See New and Nonofficial Remedies 1951, p 213)

Solution Heparin Sodium (High Potency) 10 cc vials A solution containing 5,000 U S P units (approximately 50 mg) of heparin sodium in each cubic centimeter Preserved with 0 5 per cent phenol Testagar & Company, Inc, Detroit

Mephenesin (See New and Nonofficial Remedies 1951, p 165)

Tablets Myoxane 0 5 gm B F Ascher & Company, Inc, Kansas City, Mo

Meth Dia Mer-Sulfonamides (formerly Sulfadiazine-Sulfamerazine Sulfamethazine Mixture See New and Nonofficial Remedies 1951, p 103)

Suspension Truozine with Sodium Citrate (Flavored) 473 cc bottles A suspension containing 20 mg. each of sulfadiazine, sulfamerazine and sulfamethazine and 0 1 gm of sodium citrate in each cubic centimeter Abbott Laboratories, North Chicago, Ill

Dulcet Tablets Truozine Each tablet contains 0 1 gm each of sulfadiazine, sulfamerazine and sulfamethazine U S Trade mark 500,527 (Dulcet) Abbott Laboratories, North Chicago, Ill

Tablets Truozine Each tablet contains 0 167 gm each of sulfadiazine, sulfamerazine and sulfamethazine Abbott Laboratories, North Chicago, Ill

Pyrilamine Maleate (formerly Pyranisamine Maleate See New and Nonofficial Remedies 1951, p 13)

Tablets Stangen Maleate 25 mg and 50 mg Physicians' Drug & Supply Company, Philadelphia

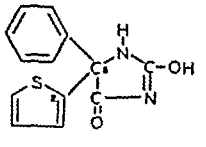
Terramycin Hydrochloride (See New and Nonofficial Remedies 1951, p 136)

Elixir Terramycin Hydrochloride (Oral Drops) 10 cc dropper bottles A flavored alcohol solution containing the equivalent of 0 2 gm of terramycin as the hydrochloride in each cubic centimeter The terramycin hydrochloride and diluent are packaged together in separate containers to be mixed before use Chas Pfizer & Company, Inc, Brooklyn, N Y

Vitamin B_{12} (See New and Nonofficial Remedies 1951, p 454)

Solution Crystalline Rametin with Benzyl Alcohol 1.5% 10 cc vials A solution containing 10 or 15 micrograms of Vitamin B_{12} in each cubic centimeter The Bio-Ramo Drug Company, Baltimore

Phethenylate —Thiantoin (Lilly) —5-Phenyl-5-(2 thienyl)hydantoin —$C_{13}H_{10}N_2O_2S$ —M W 258 29 —The structural formula for phethenylate may be represented as follows



Actions and Uses —Phethenylate is employed for the same purpose as its sodium salt See the monograph for Phethenylate Sodium

Dosage —Phethenylate is prescribed in doses equivalent to those for phethenylate sodium See the monograph for the sodium salt

Tests and Standards —

Physical Properties Phethenylate is a white tasteless hygroscopic microcrystalline powder with a slight characteristic odor It melts between 255 and 259 One gram of phethenylate is soluble in about 35 ml of alcohol. It is slightly soluble in chloroform and ether and very slightly soluble in benzene and water The pH of the saturated aqueous solution is about 6.5

Identity Tests To a dispersion of about 20 mg of phethenylate in 3 ml of thiophene-free benzene add a solution of about 10 mg of isatin in 1 ml of sulfuric acid shake the mixture vigorously for about 1 min and allow the tube to stand for 30 min the acid layer becomes a stable brown green Run a blank on the reagents no change in color occurs in the acid layer *(The test proves the presence of the thienyl group and distinguishes phethenylate from diphenylhydantoin)*

Purity Tests Dissolve the residue from the ignition of phethenylate as described later in 20 ml of hot water Cool the solution add 2 ml of diluted acetic acid and make up to a total volume of 25 ml Run a heavy metals test as directed in *U S P XIV* p 717 no more turbidity develops than in a control containing 30 γ of lead

Dry about 1 gm of phethenylate accurately weighed for 24 hours at 105 the loss in weight is not more than 1 0 per cent

Char about 1 gm. of phethenylate accurately weighed over a low flame Cool the charred mass then add 1 ml of sulfuric acid and continue ignition until no carbon remains the residue is not more than 0 10 per cent

Assay (Phethenylate) With gentle heat dissolve about 0 5 gm. of phethenylate, accurately weighed in 50 ml of alcohol and 45 ml of water contained in a 250 ml Erlenmeyer flask Titrate the dissolved acid with 0 1 *N* sodium hydroxide using thymolphthalein T S as an indicator Run a blank titration on the alcohol Each milliliter of 0 1 *N* sodium hydroxide consumed is equivalent to 0 02583 gm of phethenylate The amount of phethenylate present is not less than 97 0 nor more than 103 0 per cent.

(Nitrogen) Carry out a Kjeldahl or a semi micro Kjeldahl determination as directed in *U S P XIV* p 740 The amount of nitrogen present is not less than 10.5 nor more than 11.2 per cent, equivalent to not less than 97 0 nor more than 103 0 per cent of phethenylate

Dosage Forms of Phethenylate

SUSPENSION *Identity Tests* Shake the suspension thoroughly Extract a volume of suspension equivalent to about 0 5 Gm of phethenylate with four 25 ml portions of ether Evaporate the combined ether extracts on a steam bath and dry the residue at 105 for 1 hour On a dispersion of about 20 mg of the dried residue in 3 ml of thiophene-free benzene carry out the identity test described in the monograph for Phethenylate

Assay (Phethenylate) Thus far no satisfactory chemical method has been developed for the assay of this dosage form due to interference from other ingredients The manufacturer utilizes the following infrared spectroscopic method Shake the suspension thoroughly Transfer to a 125 ml separatory funnel an amount accurately measured equivalent to about 50 mg of phethenylate Add 5 ml of 0 1 *N* hydrochloric acid and then 25 ml of water Extract the solution thus formed with exactly 50 ml of chloroform Draw off the chloroform extract into a small glass stoppered flask containing a little anhydrous sodium sulfate Place the dried extract in a rocksalt cell with a 1 mm light path Record the spectrum between 5 4 and 5 8 μ on a Baird Infrared Recording Spectrophotometer A using chloroform in a 1 mm reference cell as a blank. The percentage of phethenylate present = 100 (absorbancy at 5 72 μ — 0 016) ÷ 0 407 where 0 016 is a correction for absorption at 5 72 μ by substances other than phethenylate and 0 407 is the absorption at 5 72 μ of a chloroform solution containing 1 mg /ml of phethenylate The amount of phethenylate present is not less than 90 0 nor more than 110 0 per cent of the labeled amount.

Oral Suspension Thiantoin 475 cc bottles A suspension containing approximately 24 mg of phethenylate (equivalent to 26 mg of phethenylate sodium) in each cubic centimeter Eli Lilly & Company, Indianapolis

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

COUNCIL APPOINTMENTS

The Board of Trustees has appointed Dr Ralph E DeForest, Rochester, Minn, as Secretary of the Council on Physical Medicine and Rehabilitation A graduate of Wayne University College of Medicine, Dr DeForest also holds a master of science degree in physical medicine and rehabilitation from the University of Minnesota, where he did research on the effects of ultrasound on growing bone He has been a fellow in orthopedic surgery and in physical medicine and rehabilitation at the Mayo Foundation and has served with the Army Medical Corps in occupied Germany His appointment became effective August 1 Howard A Carter, former secretary of the Council, has been made director of biophysical investigation and associate secretary of the Council Dr Frederick T Jung, assistant secretary of the Council, has been appointed director of the new physical laboratory

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THE USE OF NEW DRUGS

Until recent years the use of drugs has been accompanied by comparatively few worries concerning toxic reactions An overdose might kill, but usually the difference between the average dose and a fatal dose was large Not often did a patient react unexpectedly, except when a certain group of drugs was used or unless the patient was unusually sensitive to a drug Today, however, the situation is different Potent and specific drugs have been developed, their effects are sometimes unpredictable, and in some cases death has followed their use Physicians thus are asked sometimes whether modern drug therapy is safe, whether the probable outcome is worth the risk Perhaps the simplest way to answer such questions is to say that modern drug therapy sometimes produces seeming miracles, that without it countless lives would be lost and untold suffering continued At the same time it can be pointed out that, with adequate precautions and safeguards, the use of drugs is not normally a dangerous procedure Of course, physicians must admit more to themselves if accidents are to be prevented They must appreciate that unexpected and unfavorable reactions can occur in spite of exhaustive research prior to the release of a new drug, that individuals react differently and often unpredictably, and that sometimes truly questionable drugs must be used when heroic measures are indicated The careful physician uses a drug only when he knows what it can be expected to do and when he is convinced the patient needs it He then is willing to admit that, while a risk may be involved, the risk is slight when compared to the comfort the drug provides No one would deny the use of the sulfonamides or the antibiotics because they can cause worrisome reactions Their value is too well demonstrated to warrant their discard because of clinical disturbances in some patients Physicians versed in the use of drugs realize that far more harm is done by the misuse of drugs than by the occasional use of a drug that carries with it some risk

Elsewhere in THE JOURNAL (page 17) is a report on the use of a new drug (phenacemide) for epilepsy This drug can be dangerous unless properly employed and even then is not completely free of danger One might ask, then, whether the drug should be released for general use The answer lies, in part, in careful supervision of the administration of the drug, in the medical profession's employing it only after it is fully informed, and in restricting the sale to prescription use The answer also lies, in part, in consideration of the value of the drug Does its usefulness outweigh its disadvantages? To determine this, the prescriber must keep in mind the amount of research that first was compiled by able investigators, the seriousness of epilepsy, and the reactions that have always attended drug therapy for epilepsy Even the best known drugs, including those in New and Nonofficial Remedies, have not been free of toxic properties If the prescriber is convinced that the drug has special usefulness and that he understands the actions and uses, he can use it, if he is not convinced, he should avoid its use Clinical judgment determines the attitude that should be taken toward the risk involved

Another situation of interest in this perplexing aspect of drug therapy concerns the development of unexpected reactions Not infrequently a drug is released for interstate commerce after years of laboratory and clinical research and with hope that all pharmacologic properties are known Then suddenly there appears a report, or several, of, for example, agranulocytosis Does this mean the drug should be withdrawn from the market? Again the risks and the potential usefulness must be considered Within the last few days, word has been received of three cases of agranulocytosis following the use of procaine amide, which has been proposed for conditions in which quinidine is effective One wonders whether this provides sufficient excuse for deletion of the drug from the medical armamentarium or whether it is in the same class as, for example, the sulfonamides and propylthiouracil—too useful for discard but not so free of toxic properties that carelessness can ever be permitted The evidence at this time seems to support the latter approach

Physicians today have remarkable tools with which to practice medicine But, as is true of all tools, improper use is attendant with danger If there is an unusual risk associated with the use of a drug, but the physician is convinced the drug is necessary for, or at least best suited to, a patient, he should accept the risk as a challenge by which he cautiously approaches his clinical problem To indict a drug or all drug therapy because occasional reactions are seen is unfair to patients who might benefit therefrom However, he cannot afford, for his patient's welfare or his own reputation, to use a drug with which he is not familiar or which he believes is too dangerous for his practice In the final analysis, his decision must rest on his knowledge and experience and on sound judgment

INTERNATIONAL SANITARY REGULATIONS

On May 25, 1951, the Fourth World Health Assembly unanimously approved the new WHO Sanitary Regulations No 2 These regulations, which were approved by 64 member-states of the WHO, provide for the first time a single set of rules concerning international traffic Governments now have nine months in which to make reservations, which may or may not be approved by the Fifth World Health Assembly The regulations will then go into force in all countries concerned on Oct 1, 1952 In reality, that will mean all countries other than those of the communist block

The system of international sanitary regulations has already been tried in connection with the international classification for diseases and causes of death, but mortality statistics are less controversial and have less economic consequence than international traffic regulations

It took exactly a century for the national health administrations to arrive at this state of development of international relations The first international sanitary conference met in Paris in 1851 Like the subsequent international sanitary conferences held during the next 40 years in various capitals, ranging geographically from Constantinople to Washington, it dissolved with no other result than posing the problem and keeping it alive in the minds of the governments The first real international sanitary convention that came into effect was that of 1893 Attempting to keep abreast with the progress of medical science, other conventions followed, notably the International Sanitary Conventions of 1903, 1905, 1912, and 1926, the Pan American Sanitary Convention of 1905, the Pan American Sanitary Code of 1924, the International Sanitary Convention for Aerial Navigation of 1933, and the Sanitary Conventions of 1944

Except for the Pan American Sanitary Code, the conventions were ratified only by a limited number of the countries concerned At present, 13 major sanitary conventions, ranging in time from 1903 to 1946, are in force for various countries while some countries have never signed any conventions, thus adding greatly to the confusion of all sanitary measures that can be taken in regard to international traffic All these conventions, with the exception of the Articles of the Pan American Sanitary Code referring to subjects other than the pestilential diseases, will now be superseded by the new WHO regulations

The first draft of the regulations was prepared by the WHO Expert Committee on Epidemiology and Quarantine This draft was sent to all governments for comment The comments were, as far as possible, embodied in the new draft, which was then submitted to the special committee constituted by the Third World Health Assembly This committee met in Geneva from April 9 to May 5, 1951 There were official delegations from 34 countries at the session

The Fourth World Health Assembly meeting in Geneva, on May 7, 1951, reconstituted the committee as a committee of that Assembly, thus enabling all the 64 governments represented at the Assembly to participate in the deliberations Last-hour changes were made to satisfy those who had previously been absent, and on May 25 the regulations were approved by the Assembly without dissent

The new regulations recognize that complete protection against the introduction of pestilential diseases depends on the eradication of the existing foyers Until such eradication is achieved, there is a continuing danger of their spread The regulations define maximum measures that may be applied when necessary and are in general less restrictive on international traffic than the former conventions It is expected that greater security against the spread of infection will be attained with fewer restrictions on international traffic

One fundamental principle of the regulations which was successfully promoted by the American delegation was that complete information regarding the occurrence of any case of a pestilential disease must be promptly available from all parts of the world The duty of reporting has, therefore, been extended, and the WHO Epidemiological Intelligence has been greatly strengthened At present, many restrictive quarantine measures are solely due to the lack of immediate and reliable information regarding the occurrence of smallpox and murine plague

The American delegation also insisted that proper machinery should be set up for current review of the functioning of the regulations Such reviews have not hitherto been available, nor has there been any competent authority for analyzing the information available An appropriate committee to be set up for this purpose within the WHO should make it possible from time to time to review the regulations in the light of acquired experience Unnecessary restrictions might thus be removed, and measures which have been found lacking might be added to the regulations The present regulations refer mainly to plague, cholera, yellow fever, smallpox, typhus, and relapsing fever The Assembly, therefore, decided to set up an appropriate committee to consider additional regulations which may be necessary in regard to other diseases Among the problems yet to be solved is the prevention of international transport of malaria vectors The importance of such control will rapidly increase with the extent of the areas liberated from malaria vectors

The regulations contain provisions regarding the establishment of direct transit areas in airports for accommodating, in segregation, the passengers and crew, thus breaking their voyage without their leaving the airport It is expected that this measure will do away with many of the hindrances to rapid travel by air when the voyage extends over a number of countries Radio pratique has been introduced for the first time in the international agreements for ships and aircraft, which may thus avoid delay by reporting on their sanitary state before arrival

Measures against plague have definitely been centered on the control of rodents rather than on the human cases The delineation of yellow fever endemic zones has been radically changed At present, measures are taken against very large areas in Africa and South America where the virus exists or is known to have existed among jungle animals with no, or only incidental, human cases Under the new regulations, the presence of Aedes aegypti also is required before a locality can be included in the endemic zone It was the belief of the majority of the committee that only the presence of an efficient domestic vector, such as the Aedes aegypti, would make it practically possible to spread the disease beyond national frontiers This provision will greatly reduce the South American yellow fever endemic zone and consequently facilitate aerial traffic in that part of the world

The chapter concerning smallpox was completely rewritten The proposal of the American delegation that any person on an international journey may be required to possess a valid smallpox certificate was adopted So long as smallpox infection exists in so many countries and information is not always readily available regarding its occurrence, it is believed that this measure is necessary in order to limit international spread The smallpox certificate was simplified, on the other hand, so that travelers will not have to wait for the reading of the results of the vaccination It is generally recognized that most of the readings of revaccinations made in various parts of the world are of slight value Instead, it must be stated on the certificate whether a successful primary vaccination or a revaccination is in question

Several articles on measures against typhus were deleted, as they were considered unnecessary in view of the simple methods of control with dichlorodiphenyltrichloroethane (DDT) now available No ship or aircraft will be delayed on account of a case of typhus or relapsing fever on board

Bills of health are abolished Maritime declarations of health, deratting or deratting exemption certificates and vaccination certificates against yellow fever, cholera, and smallpox are the only international documents that may be required Typhus, plague, or other vaccinations may not be required as a condition of entry into a territory The sanitary declaration of an aircraft will be part of the general declaration The proposal of the American delegation to the effect that a vaccination certificate issued to an active member of the armed forces shall be accepted in lieu of an international certificate was adopted The period of validity of the yellow fever certificate was extended to six years The new smallpox vaccination certificate may be used from Dec 1, 1951, for any state which within three months of the adoption of the regulations by the Assembly declares that it does not intend to make reservations in that respect

Today, Southeast Asia lives in deadly fear of the introduction of yellow fever The Near East dreads cholera, and the United States fears smallpox None is protected as it ought to be against these dangers Each part of the world has its own problems Nevertheless, on May 25, 1951, by mutual concessions, 64 free countries agreed on a common text for solving their quarantine problems, and a United Nations specialized agency was appointed executive of the agreement

TRENDS IN CANCER MORTALITY

The Metropolitan Life Insurance Company has recently compared the mortality rates from malignant neoplasms during the periods 1946-1947 and 1949-1950 [1] The over-all percentage change in death rate for white policy holders between one and 74 years of age was an increase of 4% for the males and a reduction of 3% in females The reduction in females occurred chiefly at ages 25 to 74, with only slight changes at ages one to 24 years In the males, there was a decline in mortality at ages one to 14 years and 45 to 74, a small increase at 15 to 24, and an appreciable increase at 24 to 44 Both sexes show a decline in mortality for cancer in accessible sites, reduction being particularly marked for cancer of the uterus in females and cancer of the buccal cavity in males For cancer in inaccessible sites, the mortality rate declined slightly between 1946-1947 and 1949-1950 in females but increased in males Cancer of the respiratory tract and of the pharynx taken together increased 30 4% for males and 10 3% for females, the increases being attributable to some extent to improved diagnostic techniques, increasing alertness of the physician, and use of mass x-ray examinations Both sexes showed an increase in death rate for cancer of the pancreas, while the death rate for cancer of the ovary and other female genital organs increased by about one-sixth In both sexes, however, there was a reduction in mortality from cancer in a number of inaccessible sites, including the stomach, intestines and duodenum, rectum and anus, liver and biliary passages, and bladder The death rate from leukemia increased markedly in both sexes, possibly a reflection of improved diagnosis While the success of the campaign for early recognition and treatment of cancer cannot be judged solely by this report, the reductions in mortality for many sites of cancer are encouraging

MALPRACTICE AND THE PHYSICIAN

Elsewhere in this issue of THE JOURNAL (page 54) appears a special report of the Committee on Medicolegal Problems dealing with malpractice claims The report emphasizes the preventive aspects of the problem and contains many suggestions as to what can be done to reduce the incidence of unjust suits Committees have been created by many state and local medical associations to study the malpractice problem and to assist patients and physicians in adjusting differences that may arise, some of which may be forerunners of litigation Such committees will find this report of significant value, as will also individual physicians Patients who have just grievances should be aided in obtaining proper and prompt adjustments, but many claims, as the report points out, result from a *misunderstanding* of the legal responsibilities involved in the physician-patient relationship The report should serve to clarify an appreciation of these responsibilities Reprints will be made available by the Committee on Medicolegal Problems

SUBLINGUAL ABSORPTION OF HEPARIN

The success of heparin in the treatment of frostbite [1] and the value of initiating such treatment in the field before hospitalization of soldiers led Litwins [2] and associates of Beth Israel Hospital, New York City, to test the possibility of sublingual administration of this drug Wafers containing 125 mg of sodium heparin were placed in the sublingual pouch of 10 volunteers, where they rapidly disintegrated Absorption was usually complete in 10 minutes Periodic determinations of the blood coagulation time showed that in most instances a therapeutically effective prolongation was attained one-half hour after administration of the heparin and maintained for some four hours The New York clinicians believe from their data that sublingual administration of heparin may in time be recognized as a method of choice for the anticoagulant treatment of myocardial infarction, pulmonary embolism, and thrombophlebitis, and in vascular surgery

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[1] The Postwar Cancer Record Statistical Bulletin Metropolitan Life Insurance Company 32 8 (May) 1951

[1] Lang K Boyd L. J and Loewe L. The Functional Pathology of Frostbite and the Prevention of Gangrene in Experimental Animals and Humans Science 102 151 (Aug 10) 1945

[2] Litwins J Vorzimer J J Sussman L. N Applezweig N and Etess A D Sublingual Administration of Heparin, Proc Soc Exper Biol & Med 77 325 (June) 1951

MEDICAL NEWS

CALIFORNIA

Facilities for the Chronically Ill —San Francisco s Chronic Illness Service Center, organized in 1950, is now on a full time working basis and will assist San Francisco Medical Society members who may have problems among their patients with chronic illness The city is reported to be one of five in the nation which has developed its own Chronic Illness Service Center

COLORADO

Narcotic Violation —Dr George A Glenn, Denver, pleaded *nolo contendere* to all counts in the indictment charging violation of the federal narcotic law On July 11 he was sentenced to serve one year and one day on five counts to run concurrently, and on the sixth count sentence was suspended and he was placed on probation for two years, the probation to begin at the expiration of the sentence on the first five counts

GEORGIA

University News.—Dr Alvin G Foraker and Dr Abner Golden have been promoted from assistant professors to associate professors of pathology at the Emory University School of Medicine, Atlanta Other promotions include Dr Philip Bondy from associate in medicine to assistant professor of medicine, and Dr James F Olley from associate in pathology to assistant professor of pathology

ILLINOIS

Hospital News —Last spring, with appropriate ceremonies ground was broken for the new Memorial Hospital in Marion The new 50 bed hospital will cost about $900,000

Drive on Unlicensed Healers —According to the *Chicago Daily News* C Hobart Engle, new director of the Illinois Department of Registration and Education, has asked all state's attorneys to "crack down" on more than 400 unlicensed healers in Illinois About 100 of these are in the Chicago area The unlicensed practitioners include chiropractors, naprapaths, and naturopaths Each prosecutor has been given a list of unlicensed healers in his county, according to Jack L Sheer, chief attorney for the department

Chicago

Lectures on Biophysical Aspects of Virology.—A series of lectures and demonstrations in the biophysical aspects of virology will be given Sept 20-22 by Dr Max A Lauffer, professor of biophysical chemistry, University of Pittsburgh These lectures are part of the Gehrmann lecture series sponsored by the department of bacteriology of the University of Illinois College of Medicine The following program of lectures will be given at 1 p m each day, followed by a demonstration at 3 p m unless otherwise indicated

Sept 20 Ultracentrifugation at Abbott Hall University of Chicago the use of centrifugation for preparation and characterization of viruses.

Sept 21 Electrophoresis, at the North Amphitheatre Presbyterian Hospital the use of electrophoresis for purification and characterization of viruses

Sept 22 Electron Microscopy 9 30 a m at University of Illinois Research and Educational Hospitals, the use of electron microscopy in the study of viruses 11 a m Room 342 University of Illinois Dental-Medical Pharmacy Building

All interested are invited to attend the lectures, but there will be room for only 20 at the demonstrations All who wish to attend may register by writing to Dr J E Kempf, Department of Bacteriology, University of Illinois, 808 S Wood St , Chicago 12, before Sept 15

Grants for Research —The Hektoen Institute for Medical Research has received the following contributions for research

For investigations by a team headed by Dr Hans Popper, an annual contribution of $16,000 was received from the Dr Jerome D Solomon Memorial Research Foundation for research in liver diseases, from the Atlas Powder Company, $13,250 for the investigation of the influence of emulsifying agents on fat metabolism, from the Nepera Chemical Company, Inc , $3,500 for the study of toxicologic effects of pharmacologic agents, and from the U S Vitamin Corporation, $4,140 for research on the physiological effects of parenteral lipotropic administration For investigations by a team headed by Dr Oscar Felsenfeld, $10,000 was received from the Dr Leonard H and Louis Weissman Medical Research Foundation for research in virus diseases, from the Commercial Solvents Corporation, $12,000 for study of the inhibition of viruses transferable from animals to man, and $12,000 for studies in mycology and parasitology, and from the Eaton Company, $11,000 for further studies of nitrofurans For investigations by a team under Dr Steven O Schwartz, $5,000 was received from the Olivia Sue Dvore Foundation, $1,800 of which will be used for a research fellow in hematology and the balance for research on leukemia, and from the Edward Friedman Leukemia Fund, $3,000 for the continuation of research on leukemia For investigations on breast carcinoma by a team headed by Dr Louis P River, an annual allocation of $7,500 has been made by the Dr Jerome D Solomon Memorial Research Foundation The Karl A Meyer Fellowship of the foundation, held by Dr Hyman S Lans, has been awarded for another year for research in potassium metabolism in surgical conditions

INDIANA

Faculty Appointments.—Twenty six members of the faculty of the Indiana University School of Medicine, Indianapolis, have been advanced in academic rank by the board of trustees The promotions included the conferring of the title of professor emeritus in proctology on Dr Joseph W Ricketts, professor emeritus in genitourinary surgery on Dr Arthur F Weyerbacher and Dr Homer G Hamer, and associate professor emeritus in pediatrics on Dr J Don Miller Advanced to fill vacancies in departmental chairmanships were Dr Marlow W Manion, named professor of otolaryngology and chairman of the department of otorhinolaryngology and broncho-esophagology, and Dr Lyman T Meiks, named chairman of the department of pediatrics and professor of pediatrics Dr Manion, a member of the staff for 21 years, succeeds Dr Carl H McCaskey, who retired a year ago after 29 years on the faculty Dr Meiks succeeds Dr Matthew Winters as chairman of the department of pediatrics, a post which Dr Winters had filled with distinction for 20 years Dr Meiks has been a member of the medical school staff since 1931 and has served as full-time pediatrician at the James Whitcomb Riley Hospital for Children Dr Edward B Smith, St Louis, has been appointed professor of pathology He served for two years as an instructor in pathology at Washington University, St Louis, before entering the Army Medical Corps in 1942 After leaving the army in 1946 Dr Smith was on the pathology staffs of the University of Pennsylvania, Philadelphia, and Baylor University, Houston

IOWA

Dr Gilman Wins Chemistry Award —Henry Gilman, Ph D , professor of chemistry at Iowa State College of Agriculture and Mechanical Arts at Ames, has won the 1951 Iowa Award, given by the Iowa Section of the American Chemical Society for meritorious work in research, teaching, or industry The medal will be presented to Dr Gilman at a dinner in Iowa City on Dec 7 In addition to war research on antimalarials, Dr Gilman has done work on the relationship between the physiological action and the chemical constitution of local anesthetics, antibiotics, hypnotics, and analgesics

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Physicians are invited to send to this department items of news of general interest for example those relating to society activities new hospitals education and public health Programs should be received at least three weeks before the date of meeting.

KANSAS

Public Health Appointments.—Dr Thomas R Hood, formerly director of the Topeka-Shawnie County Health Department, was appointed executive secretary of the Kansas State Board of Health, effective Aug 1 Dr Robert H Riedel, who had accepted a temporary appointment to this position, has returned to his regular work as director of the Division of Cancer Control Dr Floyd C Beelman, former executive secretary, resigned in May to take up defense work in Washington, D C Dr H R. Wagenblast of the Wichita-Sedgwick County Health Department, is the new director of the Lawrence Douglas County Health Department in Lawrence

Teacher Training Program for the Deaf.—September 4 will initiate a new one year teacher training program for the deaf at the University of Kansas Medical Center, Kansas City Although the state has had some type of school for the deaf since 1861, it has been necessary to hire teachers trained in one of the 19 other schools in the country offering certified training programs for teachers of the deaf At present, only about one-fourth of the hard-of-hearing children in Kansas are being helped in any way A recent survey of school children in Leavenworth, initiated by Dr LaVerne B Spake, Kansas City, showed almost 6% were hard-of hearing This means that in the state of Kansas 28,197 children are probably hard-of-hearing Lack of teachers has prevented any expansion of aid to them The new teacher training program will utilize the combined facilities and members of the faculties of the university s school of education, the Kansas School for the Deaf at Olathe, and the hearing and speech department of the medical center Entrance requirement is a bachelor s degree in education At the conclusion of the course registrants will receive a master's degree in education. They will also be eligible for certification by the Conference of Executives of American Schools for the Deaf

LOUISIANA

Dr Kilbourne to Direct Division.—Dr Edwin D Kilbourne, New York, has been appointed associate professor of medicine and director of the division of infectious disease at Tulane University of Louisiana School of Medicine in New Orleans He comes to Tulane from the hospital of the Rockefeller Institute for Medical Research, where he was assistant physician. The division of infectious disease plans to build up basic research in the department, with emphasis on virus diseases.

MISSOURI

Postgraduate Course for General Practitioners—The St Louis Academy of General Practice in cooperation with Washington University will hold its second postgraduate course for general practitioners beginning Sept. 18 The course consists of lectures from 8 to 10 a m , Tuesday and Thursday, for six weeks It affords 24 hours of formal postgraduate study, accredited by the Committee on Education of the American Academy Over one hundred general practitioners are now registered

NEW YORK

Society News—Dr Samuel W Moore, New York, will speak on "Pathology and Complications of Acute Cholecystitis" before the Jefferson County Medical Society at 6 30 p m Sept 18 at the Black River Valley Club in Watertown

Hospital News.—St James Mercy Hospital, Hornell, on July 15 opened its new million dollar wing which was begun in the fall of 1949 The hospital now has a 145 bed capacity and such new departments as a postoperative recovery room, a complete cystoscopy department, and a completely new surgical department that includes three major operating rooms and an eye, ear, nose, and throat operating room

State Hospitals Appointments—Dr Francis J O'Neill has been appointed senior director of Central Islip State Hospital and Dr Bascom B Young director of Utica State Hospital, effective Aug 1 Dr O'Neill s appointment is a promotion from his position as director of Utica State Hospital Dr Young, present assistant commissioner of mental hygiene, will assume the directorship left vacant by Dr O'Neill s transfer

New York City

First Harvey Lecture.—Dr A R Todd, professor of chemistry, University Chemical Laboratory, Cambridge, England, will deliver the first Harvey Lecture of the current series at the New York Academy of Medicine on September 27 on The Nucleotides Recent Chemical Research and Its Biological Implications "

Two-Year Course in Psychotherapy—The Group Psychotherapy Institute will now offer, in addition to seminars, a two-year consecutive course that will include one year of preliminary training and one year in group psychotherapy The courses will be offered for five hours a week for 30 weeks of each year, and the time of day will be arranged to suit the participants. The number of students will be limited to 20, and preference will be given to psychiatrists, psychiatric caseworkers, and clinical psychologists engaged in individual or group psychotherapy, especially in an agency or hospital setting The tuition is $150 per year For information write to Group Psychotherapy Institute, Inc., 105 E 22 St., New York 10

Efficiency Study for Municipal Hospitals—The Hospital Council of Greater New York, at the request of the department of hospitals, is undertaking a study of the types of patients and the different facilities and programs available for acute, chronic, and convalescent cases in municipal hospitals The study, made possible through a grant from the New York Foundation, is to be completed early next year Dr Marcus D Kogel, hospital commissioner, said that the Board of Hospitals believes that more effective planning for the future of hospitals of the department could be made after pertinent information was available concerning types of patients and the factors that influence prolonged hospital stay It is also planned to analyze the services required by patients currently under care to determine the facilities and services which should be provided The hospital council will evaluate the relative cost of providing hospital care for acute and chronic illness in patients Outpatient services will also be studied in their relation to more effective use of convalescent institutions

Graduate Fortnight.—The New York Academy of Medicine in cooperation with the New York Heart Association will present its 24th Graduate Fortnight Oct 8-19 on Disorders of the Circulatory System Evening sessions beginning at 8 30 p m in the New York Academy of Medicine will be addressed by the following guest speakers

Herrman L. Blumgart Boston Coronary Disease Clinical Pathologic Correlations and Physiology
John W Gofman Berkeley Calif Diet and *Lipotropic Agents in* Atherosclerosis
Albert Szent-Gyorgyi Woods Hole, Mass Contraction in Heart Muscle
Lewis Dexter Boston, Dynamics of Acquired Valve Lesions
Eugene A. Stead Jr Durham N C Edema and Dyspnea of Heart Failure.
Louis N Katz, Chicago Importance of Cardiac Arrhythmias
Irvine H Page *Cleveland Renal* and Vasomotor Factors in Hypertension.
Merrill C Sosman, Boston Roentgen Diagnosis in Cardiovascular Disease
Thomas H. Hunter St. Louis Treatment of Bacterial Diseases of the Heart and Pericardium

Morning panel discussions will be held at the academy on Oct 9, 12, 16, and 19 There will be hospital clinics each day from 2 to 5 p m Registration fee for those not members of the academy is $10

NORTH CAROLINA

Dr Sawyer Goes to California.—Charles H Sawyer, Ph D , professor of anatomy at The Duke University Medical School, Durham, and a member of the faculty since 1944, this fall will become professor of anatomy at the new University of California at Los Angeles School of Medicine Before joining the Duke staff Dr Sawyer had taught at Yale and Stanford universities

Dr Burnett to Head Department of Medicine—Dr Charles Hoyt Burnett, professor and chairman of the department of internal medicine, Southwestern Medical School of the University of Texas, Dallas, becomes professor and head of the department of medicine at the University of North Carolina, in Chapel Hill in September Other new appointments to the staff of the school of medicine include the following Dr William J Cromartie as associate professor of bacteriology and director of the bacteriological laboratory in University Hospital, Dr Charles B Taylor as associate professor of pathology, Basil L Truscott, Ph D, as assistant professor of anatomy and Drs Clarence M Miller Jr and James B Caulfield as fellows in pathology

Training Center for Premature Infant Care.—The Duke University will become North Carolina s first training center for premature infant care this fall Public health nurses and graduate nurses in hospitals throughout the state will be trained in caring for premature babies at the Duke School of Nursing The North Carolina Premature Care Program, administered by the State Board of Health through the pediatric consultant, Dr Robert J Murphy, is sponsored by the North Carolina Pediatric Society For two and one half years the state program has sponsored six service treatment centers in North Carolina hospitals but has had no facilities for training nurses The plan may be expanded for training physicians later on Deaths in the six hospital service centers have been cut in half since the program was begun two and one half years ago, spokesmen said Service centers are located at Duke and Watts hospitals, Durham, Rex Hospital, Raleigh, North Carolina Baptist Hospital, Winston-Salem, James Walker Memorial Hospital, Wilmington, and Victoria Hospital, Asheville There are now more than 8,000 premature infants born in North Carolina every year, and about 4,000 need care at special hospital centers

OREGON

Constitutional Make-Up and Disease—The University of Oregon Medical School, through a grant of $100,000 from the Rockefeller Foundation, New York, will participate in an intensive study of the relation between physical make up and disease The study will be organized by Dr William H Sheldon of Columbia University College of Physicians and Surgeons and the head of the college s constitutional laboratory Dr Sheldon is said to expect it will take two generations to complete the study In establishing physical categories he and his co-workers and assistants have photographed more than 100,000 persons Members of the department of medicine of the medical school will cooperate

PENNSYLVANIA

Regional Meeting of Pathologists.—The Pennsylvania Association of Clinical Pathologists, the Clinical Pathological Society of Pittsburgh and the Middle Eastern Regional Committee of the College of American Pathologists will meet at the Roosevelt Hotel in Pittsburgh Sept 14-15 A slide seminar on "The Pathologic Anatomy of Virus Diseases opens the morning session Sept 14 Slide sets can be reserved by registrants who pay the slide seminar registration fee of $5, which should be forwarded to Dr Elwyn L Heller, Department of Pathology, University of Pittsburgh, Pittsburgh 13 The seminar will be moderated by Dr Heller, and Dr John P Wyatt, professor of pathology, St Louis University School of Medicine, will serve as referee A social hour and informal dinner are scheduled for Friday and Saturday evening at the Roosevelt Hotel There will be a business meeting of the Pennsylvania Association of Clinical Pathologists Sept 16

Philadelphia

Personal—Dr Archer P Crosley Jr, assistant instructor of medicine at the University of Pennsylvania School of Medicine, has been appointed a staff physician in the medical division of Sharp & Dohme, Inc

Gift for Televising Operations—A gift of $30,000 for the purchase of equipment to be used in the color televising of surgical operations performed in the Hospital of the University of Pennsylvania, Philadelphia, has been announced The gift is from anonymous donors and friends of Dr Isidor S Ravdin, John Rhea Barton Professor of Surgery in the University of Pennsylvania School of Medicine and chairman of the Harrison Department of Surgical Research

Pittsburgh

Dr Wishik Joins University Staff—Dr Samuel M Wishik, New York, has been appointed professor of maternal and child health at the University of Pittsburgh School of Public Health, where he and his staff will develop a program of teaching and research Emphasis will be given to public health administration Dr Wishik s most recent position has been that of director of child health in New York City, formerly he was chief of the program planning section of the United States Children's Bureau and director of maternal and child health and crippled children for the Territory of Hawaii He served in the United States Public Health Service during the war His past teaching activities include appointments at New York Medical College, Columbia University, The Johns Hopkins University, and the University of Hawaii

SOUTH DAKOTA

University Appointments—Five new appointments have been made to the resident teaching staff of the University of South Dakota School of Medicine, Vermillion Charles D Cox, Ph D, of Pennsylvania State College, will be professor and chairman of the department of microbiology and public health He has taught in the Medical College of Virginia in addition to Penn State During the war he was in charge of bacteriology for the China Burma India theater medical laboratory Dr Amos C Michael will come to the university on Dec 15 as associate professor of pathology He has held the same position at Indiana University, Indianapolis Dr Louis F Michalek is already on duty as assistant professor of pharmacology in the school of medicine. Adaline N Mather Ph D, has been appointed assistant professor of microbiology, beginning Sept. 1, she has been at Southern Illinois University in the department of bacteriology Robert Trankle, M.A, started his work July 1 as instructor in microbiology Dr Warren L Jones, Sioux Falls, has been appointed associate in clinical physiology Dr Robert S Monk Jr Yankton instructor in clinical anatomy, and Dr Frederick M Stark, Sioux City, Iowa, clinical assistant professor of neurology and psychiatry

TENNESSEE

Cancer Research Laboratory.—The University of Tennessee Medical Unit s Cancer Research Laboratory has been added to the medical center in Memphis Funds for the building completed at a cost of $499,088, were made available by the National Cancer Institute of the United States Public Health Service

General Practice Clinic.—Dr Paul S Williamson, general practitioner of Vernal, Utah, will be the director of the new Family General Practice Clinic to be established by the University of Tennessee College of Medicine in the outpatient department of John Gaston Hospital in Memphis, and opened Sept. 27 The clinic marks a departure from the trend to specialization in medicine It will stress for graduating medical students the idea of "family practice Tennessee is in need of family practitioners Dr Williamson has been engaged in general practice at Vernal since 1947 The clinic will be operated under the division of preventive medicine

TEXAS

New Laboratory—A tissue metabolism research laboratory has been established at the University of Texas Medical Branch, Galveston under the direction of Wiktor W Nowinski, Ph D, associate professor of neurochemistry The laboratory will be devoted to clinical research concerned with tissue metabolism in the treatment of burns, and in the promotion of repair and regeneration

Reprint on Yellow Fever Epidemics.—The University of Texas Press is arranging for the publication of a reprint of Dr Ashbel Smith s account of the yellow fever epidemic in Galveston in 1839 The reprint is being prepared with a biographical sketch of Dr Smith and a general account of the development of knowledge regarding the control of yellow fever Dr Smith

(1805-1886) was a founder of the University of Texas and first chairman of the board of regents He had previously served as dean of the Texas Medical College in Galveston, which preceded the University of Texas Medical Branch

VIRGINIA

Society Honors Managing Editor.—The August issue of the *Virginia Medical Monthly,* by order of the council of the Medical Society of Virginia, is dedicated to Miss Agnes V Edwards and her father, both of whom have been and were long associated with the publication Dr Landon B Edwards started the monthly as a private enterprise in 1874, passed it to his son, Dr Charles M Edwards, on his death in 1910, and when the latter went to war Miss Edwards took over and has managed it since that time In 1924 she was officially elected business manager and executive secretary of the Medical Society of Virginia, which had purchased the journal in the fall of 1919 The medical society dedicated the August issue to her as an expression of appreciation for her work

WEST VIRGINIA

Board Elections.—Dr William M Jarrett, Charleston dentist, was re-elected chairman of the state board of health at the meeting held in Charleston June 29 He will serve for an additional two years Dr Walter E Vest of Huntington was re-elected chairman of the Medical Licensing Board for a two year term He was the first chairman of the board, organized July 1, 1949 He had previously served for 12 years as president of the old public health council, which was replaced by the licensing board The fall meeting of the Medical Licensing Board will be held at the Capitol in Charleston, Oct 1-3, for the purpose of examining applicants for licensure to practice in West Virginia

Medical Press Radio Code—The Doctor-Press Radio Code of Ethics, prepared by a committee composed of Dr E Lyle Gage, Bluefield, representing the West Virginia State Medical Association, and Francis P Fisher and George Clinton of Parkersburg, representing, respectively, the State Newspaper Council and the State Broadcasters' Association, was formally adopted by the State Newspaper Council at a meeting at Spencer July 27 The code had the unanimous approval of representatives of the press, radio, and medical profession who attended the annual press radio conference sponsored by the state medical association, held at Charleston Jan 28 It had been approved previously by the council of the state medical association, and it was approved by the West Virginia Broadcasters' Association at a meeting held last spring

WISCONSIN

Funds for Cancer Research—The University of Wisconsin regents have accepted a grant of $45,000 for cancer research from the estate of the late Mrs Mary E Stewart, former Wausau resident Mrs Stewart, daughter of the late Alexander Stewart, who was a pioneer lumberman in the Wausau area, willed her estate of nearly $5 million to her sister, with the provision that after the sister s death the money was to be used for cancer research The sister has released the funds for current use in cancer research McArdle Memorial Laboratory, university cancer research center, already has benefited from the Stewart estate by grants of $30,000 in December, 1949, and $15,000 in July, 1950 The present $45,000 grant is now available for use The money is used to pay the salaries of some of the younger key staff people and to purchase supplies and apparatus

WYOMING

Blood Typing and RH Testing Program.—In response to requests by Wyoming physicians, and as an addition to the Division of Maternal and Child Health Services, the state board of health at a recent meeting approved the initiation of a state wide program for the routine blood typing and Rh testing of all prenatal blood specimens sent to the Wyoming Public Health Laboratory in Cheyenne This program began August 1 The laboratory has been performing Rh tests on blood specimens sent in special containers but has not done blood typing The new Rh and blood typing program will require only a single clotted blood specimen for an Rh test, blood typing, and prenatal serologic test for syphilis As planned this new service will be limited strictly to obstetrical cases, except that Rh tests will be performed on husbands of Rh negative women on special request

GENERAL

Survey of County Chronic Diseases Programs.—In a recent survey of activities of 757 county medical societies, the following programs related to chronic diseases were reported

Five hundred and forty five county medical societies participate in tuberculosis control programs, and 533 in cancer control programs, and 367 cooperate in a diabetes control program, and 149 in a rheumatic fever control program Seventy-six county medical societies reported that they are experimenting with multiphasic screening The survey was made by the Council on Medical Service of the American Medical Association

Alcohol Committee Enlarges Scope—The National Committee on Alcohol Hygiene, Inc, with national headquarters in Baltimore, has enlarged its scope of education to include the expanding American social ills of today Besides educational reports on alcoholism and alcoholics, the committee will disseminate scientific articles for the laity on dope and drug addiction, crime and criminality, and psychological sexual illnesses and divorce The first report, now available for distribution, is titled "How to Help an Alcoholic" The second report will be issued also in booklet form in September entitled "The Dope on Dope" The executive director of the committee is Dr Robert V Seliger, Baltimore

Dr Hartley to Edit Northwest Medicine—Dr Herbert L Hartley, Seattle, has been named editor-in-chief of *Northwest Medicine,* succeeding Dr Clarence A Smith Dr Smith, who helped to found the medical journal in 1901 and who observed his 90th birthday anniversary in January, was named editor emeritus The journal is the official publication of the state medical associations of Washington, Oregon, Idaho, and Alaska Dr Hartley, who has practiced in Seattle for 19 years, was graduated from the University of Iowa Medical School in 1928 He served in the Navy Medical Corps for four years during World War II The new editor is a member of the publication committee of *GP,* the journal of the American Academy of General Practice

The Cardiac in Industry—The Joint Committee on the Cardiac in Industry has held its first meeting in New York to consider problems of education, research, rehabilitation, and employability of workers with heart disease The committee was set up by the American Heart Association Its chairman is Dr Leonard J Goldwater, professor of industrial hygiene, Columbia University School of Public Health, New York. Other members are Drs Rufus B Crain, medical director, Eastman Kodak Company, Rochester, N Y, Edward M Kline, medical consultant, General Electric Company, Cleveland, Leo Price, director, Union Health Center, International Ladies' Garment Workers' Union, New York, Brandt F Steele, internist and psychiatrist, Philadelphia, and James V Warren, physiologist, Emory University School of Medicine, Atlanta

Markle Scholar Nominations—The John and Mary R. Markle Foundation invites deans of medical schools in the United States and Canada to make nominations for the fifth group of Scholars in Medical Science on or before Dec 1, 1951 Each school may nominate one candidate Candidates should have completed the usual fellowship training in some area of science related to medicine and should hold, or expect to hold, in the academic year 1952-53 a full time faculty appointment on the staff of a medical school The grants are not intended for support of interns or residents, or for those considered by the faculty as advanced students still in training. Grants of $30,000, payable at the rate of $6,000 annually, will be made to the schools over a five year period toward the support of each scholar and his research The number of scholars to be appointed in 1952 has not yet been determined Twenty were named in 1950 and in 1951 A new booklet about the plan with suggestions for making nominations, is available on request from the foundation, 14 Wall St, New York 5

Obstetric Seminar.—This seminar, annually sponsored by the Medical College of Georgia and the bureaus of maternal and child health of the South Carolina, Georgia, and Florida state health departments, will be held at the Sheraton Plaza Hotel, Daytona Beach, Fla , Sept 10-12 The meeting is approved for credit hours by the American Academy of General Practice Visiting lecturers include Dr R Gordon Douglas, professor of obstetrics, Cornell Medical School, New York, Dr Edith L Potter, associate professor of pathology, University of Chicago, Dr Francis B Carter, professor of obstetrics The Duke University, Durham, N C , Dr Carl Huber, professor of obstetrics and gynecology, Indiana University, Indianapolis, Dr Fred L Adair, Mary Campu Ryerson emeritus professor of obstetrics and gynecology, University of Chicago, and Dr Charles C Chapple, associate professor of pediatrics, Hospital of the University of Pennsylvania, Philadelphia There is no registration fee Programs are available on request at the Georgia Department of Public Health

Annual Meeting on Gastroenterology—The National Gastroenterological Association will hold its meeting at the Drake Hotel in Chicago Sept 17-19 The program will include a symposium on peptic ulcer, in which Dr Andrew C Ivy, Chicago, will present the physiological aspects Dr David J Sandweiss of Detroit, the medical aspects, and Dr Lester R Dragstedt of Chicago, the surgical aspects There will also be symposia on the pancreas, psychosomatic medicine, and carcinoma and other individual papers Other speakers include Drs C Wilmer Wirts and Garfield G Duncan, Philadelphia, Dr Charles P Rhoads, New York, Dr R Russell Best, Omaha, Drs Sidney A Portis and Walter L Palmer, Chicago, and Dr Fred J Hodges, Ann Arbor, Mich Immediately following the convention, from Sept 20 to 22, the association will conduct a course in postgraduate gastroenterology at the Drake under the direction of Drs Owen H Wangensteen, Minneapolis, and Isadore Snapper, New York Further information may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broadway, New York 23

Chest Physicians Essay Award—The Board of Regents of the American College of Chest Physicians offers a cash prize award of $250 to be given annually for the best original contribution, preferably by a young investigator, on any phase relating to chest disease The prize is open to contestants of other countries as well as those residing in the United States The award, together with a certificate of merit, will be made at the annual meeting of the college Second and third prize certificates will also be given All manuscripts submitted become the property of the American College of Chest Physicians and will be referred for consideration to the editorial board of the college journal, *Diseases of the Chest* The college reserves the right to invite the winner to present his contribution at the annual meeting Five copies of the manuscript, typewritten in English, should be submitted to the executive office, American College of Chest Physicians, 112 E Chestnut St., Chicago 11, not later than April 1, 1952 The only means of identification of the author or authors should be a motto or other device on the title page, and a sealed envelope bearing the same motto on the outside enclosing the name of the author or authors

Vitamin Foundation Grants Awarded—Nine new grants for research in nutrition have been awarded by the National Vitamin Foundation, which makes grants for research semiannually Among the grants were the following Max K Horwitt, Ph.D , State Hospital, Elgin, Ill , was awarded $5 000 for the continuation of studies of nicotinic acid (niacin) deficiency in man and of the possible interrelationships between nicotinic acid, tryptophan, and riboflavin Nevin S Scrimshaw, Ph D Rochester, N Y , director of the division of nutrition for the Pan American Sanitary Bureau, was awarded $8,000 for the continuation of studies on the effectiveness of vegetable protein supplemented by synthetic vitamin B_{12} on the growth and development of undernourished children Drs Robert W Heinle and David R Weir, Western Reserve University, Cleveland, were awarded $6,000 for the continuation of studies on the hematopoietic role of vitamins of the B group in normal and pathological conditions of animals and human beings. Earle W McHenry, Ph D , University of Toronto, Canada, was awarded $9,600 for the study of the relation of vitamin B_6 (pyridoxine) to protein metabolism Dr C Lockard Conley, Johns Hopkins University, Baltimore, was awarded $5,000 for the study of the absorption, utilization, and excretion of vitamin B_1

Catastrophic Accidents—Disasters in which the list of dead tallied 100 or more occurred 13 times in the United States during the 1941-1950 decade, Metropolitan Life Insurance Company statisticians report The highest toll was wrought by the Texas City fire and explosion of April, 1947, in which 561 lives were lost. Next highest in number of deaths were the 1942 night club fire in Boston, killing 492, and the explosion of two ammunition ships at Port Chicago, California, in 1944, which cost 322 lives The other ten disasters in which 100 or more died are the following

	Dead
Hartford Conn circus fire 1944	168
Texas and Oklahoma tornado 1947	167
Pennsylvania West Virginia and Maryland tornado 1944	159
Cleveland Ohio gas tank explosion 1944	130
Oklahoma Missouri and Arkansas tornado 1945	119
Atlanta Ga hotel fire 1946	119
Southern and Midwestern States tornadoes 1942	111
Centralia Ill coal mine explosion 1947	111
New York Bay N Y destroyer explosion 1944	100
Northeastern United States, wind and snow storm 1950	100

From a continuing study of accidents in which five or more lives are lost, the statisticians note that there have been more such accidents during the post-war years than during the war years, but the number of deaths has been lower From 1941 to 1945 there were 482 catastrophes costing 6,801 lives, but from 1946 to 1950 there were 568 such accidents with a combined death toll of 6,412 Deaths from military aviation were not included in the study Occurring most frequently, the statisticians report, are conflagrations, burns, and explosions, with motor vehicle accidents ranking second

Report of Research Fund—The Jane Coffin Childs Memorial Fund for Medical Research announces that in a total of $254,587 for support of cancer research projects and fellowships, grants of $10,000 and over were made as follows Dr Harry S N Greene Yale University, New Haven, Conn , $76,392 for three years for the biological study of cancer Edward L Tatum Ph D , Stanford University School of Medicine, San Francisco, $15,000 for three years for studies on biological and enzymatic effects of chemical carcinogens in inducing mutations, Yale University School of Medicine, $10,000 for one year for maintenance of the new animal house, Dr Leon L Miller, University of Rochester School of Medicine and Dentistry, $45,000 for three years for studies of protein synthesis as related to neoplastic growth, Dr Heinz Herrmann, University of Colorado School of Medicine, Denver, $24,500 for three years for studies on the incorporation of radioactive tracer substances into fractions of developing muscle tissue, and Charles W Hooker, Ph D , University of North Carolina School of Medicine, Chapel Hill, $12,000 for three years for studies on testicular tumors in mice and the problem of the nature of the tumor cell Grants of $5,000 to $10,000 include Dr Alexander Haddow and his associates, Chester Beatty Research Institute of the Royal Cancer Hospital, London, England, $5,000 for a year for investigations on the chemistry, virology, and chemotherapy of cancer, William U Gardner, Ph D , and John J Trentin, Ph D , Yale University School of Medicine, $5,500 for one year for studies on the endocrine physiology of the growth and function of the mammary gland, lactation, and experimental tumorigenesis, Dr Henry D Hoberman, Yale University School of Medicine, $9,900 for one year for investigations on the rates of formation of nuclear and cytoplasmic proteins, Dr Henry S Kaplan, Stanford University School of Medicine San Francisco, $7,150 for one year for studies on the factors controlling growth and metastasis of transplanted tumors, and Dr Martin Lubin, Massachusetts Institute of Technology, Cambridge, under the guidance of Francis O Schmitt, Ph D , $5,500 for one year

Prevalence of Poliomyelitis—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated

Area	Aug 18 1951	Aug 11 1951	Aug 19 1950
New England States			
Maine	6	5	8
New Hampshire	1	5	
Vermont	6	1	2
Massachusetts	29	20	17
Rhode Island	1		2
Connecticut	16	25	12
Middle Atlantic States			
New York	103	105	191
New Jersey	22	10	42
Pennsylvania	49	25	69
East North Central States			
Ohio	95	73	83
Indiana	29	16	29
Illinois	151	129	104
Michigan	117	115	83
Wisconsin	84	57	21
West North Central States			
Minnesota	39	19	22
Iowa	57	33	46
Missouri	50	26	32
North Dakota	6	2	5
South Dakota	7	3	11
Nebraska	21	25	20
Kansas	62	30	18
South Atlantic States			
Delaware			8
Maryland	4	7	27
District of Columbia	1	3	10
Virginia	14	18	68
West Virginia	8	12	17
North Carolina	23	16	50
South Carolina	17	7	21
Georgia	42	38	18
Florida	15	20	19
East South Central States			
Kentucky	22	17	42
Tennessee	43	51	36
Alabama	64	71	27
Mississippi	40	28	15
West South Central States			
Arkansas	34	18	17
Louisiana	51	30	17
Oklahoma	48	49	23
Texas	95	97	113
Mountain States			
Montana	6	1	1
Idaho	5	6	2
Wyoming	4	8	4
Colorado	82	112	13
New Mexico	4	3	2
Arizona	19	20	1
Utah	50	34	4
Nevada	3	2	
Pacific States			
Washington	16	19	25
Oregon	6	16	29
California	108	89	63
Territories and Possessions			
Alaska		1	
Hawaii		3	
United States	1 785	1,526	1 485

FOREIGN

European Congress of Rheumatology.—This congress, organized by the Sociedad Espanola de Reumatismo will be held in Barcelona, Spain Sept 24-27 under the sponsorship of the Ministro de la Gobernacion Dr Philip S Hench of the Mayo Clinic, Rochester Minn has been officially invited by the Spanish Government as guest of honor

The Conferences of Bichat.—The discussions of Bichat, "Les Entretiens de Bichat 1951, which have been held during the last four years will be held Oct. 8 13 at the Faculty of Medicine of Paris Physicians, surgeons and specialists will discuss clinical and therapeutic improvements The first and last days will be reserved, as is customary, for surgeons and specialists, while the other four days will be devoted to physicians and practitioners. The latter will also be able to attend those lectures on surgery and the specialties which are of interest in general practice Medical motion pictures will be shown during the intermissions for meals and in the evening The lectures on medicine will be under the direction of professors Guy-Laroche and Justin-Besançon, and those on surgery and specialties under the direction of the surgeons and specialists of the Hôpital Bichat. Registration for the Entretiens de Bichat 1951 may be made at Entretiens de Bichat, L Expansion Scientifique Francaise, 23, rue du Cherche-Midi, Paris 6e, France

CORRECTION

Prolapse of the Urethra in Young Girls.—In the article on prolapse of the urethra by Drs J Denny Moffett and Rafe Banks Jr in THE JOURNAL, Aug 4, 1951 (page 1288), the address of the senior author was omitted Dr Moffett s address is 111 Broadway, Daytona Beach, Fla

MEETINGS

AMERICAN...

Ambulatory Fracture Association Arrowhead Springs Hotel San Bernardino Calif Oct. 8-11 Dr H W Wellmerling 626 Griesheim Bldg Bloomington, Ill Secretary

American Academy of Ophthalmology and Otolaryngology, Chicago Oct. 14-18 Dr W L. Benedict 100 First Avenue Bldg Rochester Minn Executive Secretary

American Academy of Pediatrics Toronto Canada Oct. 20-25 Dr E H Christopherson 636 Church St. Evanston Ill Executive Secretary

American Association for the Surgery of Trauma The Seigniory Montebello Quebec Canada Oct 23 25 Dr Charles G Johnston, 1512 St. Antoine St., Detroit 26 Secretary

American Association of Blood Banks Hotel Nicollet, Minneapolis, Oct 22 24 Miss Marjorie Saunders 3301 Junius St. Dallas 1 Texas Secretary

American Association of Obstetricians Gynecologists and Abdominal Surgeons The Homestead Hot Springs Va Sept 6-8 Dr William F Mengert, 2211 Oak Lawn Ave Dallas Texas Secretary

American Cancer Society New York Oct. 25 Dr Charles S Cameron 47 Beaver St New York Medical Director

American Congress of Physical Medicine Shirley Savoy Hotel Denver Sept 4-8 Dr Walter J Zeiter 2020 E. 93d St. Cleveland 6 Executive Director

American Hospital Association St. Louis Sept 17 20 Mr George Bugbee 18 E Division St Chicago 10 Executive Director

American Medical Writers Association Pere Marquette Hotel Peoria Ill Sept. 19 Dr Harold Swanberg 209 W C U Bldg Quincy Ill Secretary

American Roentgen Ray Society Washington D C Sept. 25-28 Dr Barton R Young Germantown Hospital Philadelphia 44 Secretary

American Society of Clinical Pathologists Chicago Oct 15-20 Dr *Clyde G Culbertson 1040 W Michigan St Indianapolis 7 Secretary*

American Society of Maxillofacial Surgeons Drake Hotel Chicago, Sept 23 26 Dr Casper M Epsteen 25 E Washington St. Chicago 2 Secretary

Association of Life Insurance Medical Directors of America New York Oct. 11 12 Dr Henry B Kirkland P O Box 594 Newark 1 N J Secretary

Association of Military Surgeons of the United States Palmer House Chicago Oct 8-10 Colonel James M Phalen Armed Forces Institute of Pathology Washington 25 D C., Secretary

Central Neuropsychiatric Association Hotel Nicollet Minneapolis Oct 19 20 Dr Lee M Eaton 102 Second Ave S W Rochester Minn Secretary

College of American Pathologists Chicago Oct 15-16 Dr Tracy B Mallory Massachusetts General Hospital Boston Secretary

Colorado State Medical Society Denver Sept. 18-21 Mr Harvey T Sethman 1612 Tremont Place, Denver 2, Executive Secretary

Delaware, Medical Society of Wilmington Oct. 8-10 Dr Andrew H. Gehret 1007 Park Place Wilmington Secretary

District of Columbia Medical Society of the Hotel Statler Washington Oct. 1 3 Mr Theodore Wiprud 1718 M St N W Washington Secretary

Gulf Coast Clinical Society Edgewater Gulf Hotel Edgewater Park, Miss Oct 18 19 Dr C. D Taylor 113 Davis Ave. Pass Christian Miss. Secretary

Interstate Post Graduate Medical Association of North America St. Louis Oct. 22 26 Dr Tom B Throckmorton Equitable Bldg Des Moines Iowa Secretary

Kansas City Southwest Clinical Society Municipal Auditorium Kansas City Mo Oct. 1-4 Dr Maxwell G Berry 630 Shukert Bldg Kansas City Mo Director of Clinics

Kentucky State Medical Association Columbian Auditorium Louisville Oct. 2 5 Dr Bruce Underwood 620 S Third St Louisville 2 Secretary

Michigan State Medical Society Grand Rapids Sept 26-28 Dr L. Fernald Foster 606 Townsend St. Lansing 15 Secretary

Midwest Regional Meeting American College of Physicians Columbus Ohio Oct. 13 Dr B K Wiseman Kinsman Hall Ohio State University Columbus 10 Ohio Chairman

Mississippi Valley Medical Society Peoria, Ill Sept. 19 21 Dr Harold Swanberg 510 Maine St Quincy Ill Secretary

Montana Medical Association Great Falls Sept. 13 16 Mr L. R. Hegland 104 N Broadway Billings Executive Secretary

Nashville Postgraduate Medical Assembly Maxwell House Nashville Tenn Oct 3 5 Dr W G Kennon Jr 647 Doctors Bldg Nashville 3 Secretary

Neurosurgical Society of America Sun Valley Idaho Sept 12 14 Dr C D Hawkes 22 N Manassas St. Memphis 5 Tenn Secretary

Nevada State Medical Association Riverside Hotel Reno Sept. 13 15 Dr Wesley W Hall 307 W Sixth St Reno Secretary

New Hampshire Medical Society, Equinox House Manchester Vermont Sept 30-Oct. 2 Dr Deering G Smith 44 Chester St Nashua Secretary

Northeastern Section Southeastern Surgical Congress Lord Baltimore Hotel Baltimore Sept 13 15 Dr W Raymond McKenzie Medical Arts Bldg Baltimore 1 Secretary

North Texas Southern Oklahoma Fall Clinical Conference Wichita Falls Texas Sept 19 Dr W L. Powers 517 Hamilton Bldg Wichita Falls Chairman

Oregon State Medical Society Masonic Temple Portland Oct 10-13 Dr Robert F Miller 833 S W Eleventh Ave Portland 5 Secretary

Pennsylvania Medical Society of the State of Pittsburgh Sept. 16-20 Dr Walter F Donaldson 500 Penn Ave Pittsburgh 22 Secretary

Southwestern Medical Association El Paso Texas Oct 18 20 Dr W W Schuessler 1415 First National Bank Bldg El Paso Texas Secretary

Southwestern Surgical Congress Hotel Jefferson St. Louis Sept 24-26 Dr C. R. Rountree 1227 Classen St. Oklahoma City 3 Secretary

Texas Academy of General Practice Shamrock Hotel Houston Texas Sept. 10-11 Dr B H Bayer 104 E 20th St. Houston 8 Secretary

U S Chapter International College of Surgeons Palmer House Chicago Sept. 10-14 Dr Arnold S Jackson 1516 Lake Shore Drive Chicago Executive Secretary

Utah State Medical Association Salt Lake City Sept 13 15 Dr T C. Weggeland 42 S Fifth East St Salt Lake City Secretary

Vermont State Medical Society Equinox House Manchester Sept 30-Oct 2. Dr James P Hammond 542 Main St Bennington Secretary

Virginia Medical Society of Virginia Beach Oct. 7 10 Mr Richard H. Nash 1105 W Franklin St Richmond Executive Secretary

Washington State Medical Association Olympic Hotel Seattle Sept. 9 12 Dr James W Haviland 338 White Henry-Stuart Bldg Seattle Secretary

Western Society of Electro-Encephalography Olympic Hotel Seattle Sept 7-8 Dr Nicholas A Bercel 450 N Bedford Drive Beverly Hills Calif Secretary

Wisconsin State Medical Society of Hotel Schroeder and Milwaukee Auditorium, Milwaukee Oct. 1 3 Mr Charles H. Crownhart 704 E Gorham St , Madison 3 Secretary

Wyoming State Medical Society Rock Springs Sept. 27 29 Dr Glenn W Koford 2020 Carey Ave Cheyenne Secretary

INTERNATIONAL

European Congress on Rheumatism Barcelona Spain, Sept. 24-27 Dr Gunnar Edström Lund Sweden Secretary

General Practitioners Study Club International, Rome, Italy Sept. 12 15 Dr John O Connell, 10300 Lackland Road St. Louis 14 Mo., U S A President.

Inter American Congress of Surgery Buenos Aires Argentina Oct. 1-6

International Anesthesia Research Society London England Sept. 3 7 Mr R. W Cope University College Hospital London W C.1, England.

International Association of Allergists Zurich Switzerland Sept. 23 29 Prof A S Grumbach Hygiene Institut der Universitaet Zurich Gloriastr 32, Zurich, Switzerland.

International Congress of Anesthesiology Nursing School of the Salpiettre, 47 Boul de l Hospital Paris France Sept 20-22. 12 rue de Seine, Paris 6• France Secretariat.

International Congress on Industrial Medicine Instituto Superior Técnico Lisbon Portugal, Sept. 9 15 Dr Luis Guerreiro Instituto Nacional do Trabalho e Previdência Praça do Comercio Lisbon Secretary General.

International Congress on Mental Health Mexico City Mexico Dec. 11 19 Mrs Grace E O'Neill Division of World Affairs National Association on Mental Health 1790 Broadway New York 19 N Y

International Gerontological Congress Hotel Jefferson St. Louis Mo U S A Sept. 9 14 Dr John E Kirk 5600 Arsenal Street, St. Louis 9 Mo., Chairman Program Committee

International Poliomyelitis Congress Copenhagen Denmark, Sept. 3 7 Prof Dr Niels Bohr Statens Seruminstitut 80 Amager Blvd Copenhagen S Denmark, President.

International Society of Surgery Paris France Sept. 24-29 Dr L. Dejardin 141 rue Belliard, Brussels Belgium Secretary General.

International Society for the Welfare of Cripples Fifth World Congress Stockholm Sweden Sept 9-14 Mr Donald V Wilson 54 E. 64th St. New York 21 N Y U S A Executive Director

Pan American Congress of Pediatrics Montevideo Uruguay Dec 5-8 Dr Maria Luisa Saldien de Rodriguez, Avenida 18 de Julio 1246 Montevideo Uruguay General Secretary

Pan Pacific Surgical Association Congress Honolulu Hawaii Nov 7 19 Dr Forrest J Pinkerton Suite 7 Young Bldg. Honolulu Hawaii, President.

World Confederation for Physicial Therapy Copenhagen Denmark, Sept. 7-8

World Medical Association Stockholm Sweden Sept. 15-21 Dr Louis H Bauer 2 E. 103d St., New York 29 N Y., U S A. Secretary General

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama *Examination* Montgomery June 24-26 1952. Sec Dr D G Gill 537 Dexter Ave Montgomery 4

Arkansas * *Regular* Little Rock Nov 8 9 Sec Dr Joe Verser Harrisburg

*Colorado * Reciprocity* Denver *Oct. 9 Final date for filing application* is Sept 24 Ex Sec Mrs Beulah H Hudgens 831 Republic Bldg Denver 2

Georgia Atlanta June August Oct 9-11 Sec Mr R C Coleman 111 State Capitol Atlanta.

Guam The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec Dr John Y Battenfield Agana.

Illinois Chicago Oct 9 11 Superintendent of Registration Mr Charles F Kervin Capitol Building Springfield

Indiana Indianapolis June 1952 Sec Dr Paul R. Tindall 1138 K of P Bldg. Indianapolis 4

Kansas Topeka Dec 12 13 Sec Dr O W Davidson 772 New Brotherhood Bldg Kansas City

Kentucky *Examination* Louisville Dec 11 13 Sec Dr Bruce Underwood 620 S 3rd St Louisville

Maryland *Examination* Baltimore Dec 11 14 Sec Dr Lewis P Gundry 1215 Cathedral St Baltimore

Michigan * *Examination* Lansing Oct. 10-12 Sec Dr J Earl McIntyre, 202-4 Hollister Bldg Lansing.

Minnesota * Minneapolis Oct. 16-18 Sec Dr Julian F DuBois 230 Lowry Medical Arts Bldg St Paul 2

Mississippi *Reciprocity* Jackson December Asst Sec Dr R. N Whitfield Old Capitol Bldg Jackson

New Hampshire Concord Sept. 12 13 Sec Dr John Samuel Wheeler Room 107 State House Concord

New Jersey *Examination* Trenton Oct 16-19 Sec Dr E S Hallinger 28 W State St. Trenton

New Mexico * Santa Fe Oct. 8-9 Sec Dr Charles J McGoey Coronado Bldg. Santa Fe

New York *Examination* Albany Buffalo New York and Syracuse Oct. 31 Nov 3 Sec Dr Jacob L Lochner Jr 23 S Pearl St Albany

North Carolina Asheville Oct 7-8 Sec Dr Joseph J Combs Professional Bldg Raleigh.

Ohio *Examination* Columbus December *Reciprocity* Columbus Oct. 2. Sec Dr H M Platter 21 W Broad St. Columbus 15

Oregon * *Reciprocity* Portland Oct 12 13 *Examination* Portland Jan 1952 Ex Sec Mr Howard I Bobbitt, 609 Failing Bldg Portland.

Puerto Rico *Examination* Santurce Sept. 4-7 Sec Mr Luis Cueto Coll Box 3717 Santurce

South Carolina *Reciprocity* Columbia Sept 10 and Oct. 1 Sec Dr N B Heyward 1329 Blanding St. Columbia

South Dakota * *Examination* Sioux Falls Jan 15 16 Ex Sec Mr John C Foster 300 First National Bank Bldg Sioux Falls

Virgin Islands Charlotte Amalie Nov 7-8 Sec Dr Earle M Rice St. Thomas

Wyoming *Examination* Cheyenne Oct 1 Sec Dr Franklin D Yoder State Capitol Cheyenne

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Arizona *Examination* Tucson Sept 18 Sec. Mr Francis A Roy 423 Liberal Arts Bldg University of Arizona Tucson

Connecticut *Examination* New Haven Oct. 13 Exec Asst Miss Mary G Reynolds State Board of Healing Arts 110 Whitney Avenue New Haven 10

District of Columbia *Examination* Washington Oct. 22 23 Sec Dr Daniel L. Seckinger 4130 E. Municipal Bldg Washington

Florida Gainesville Nov 10 Sec Mr M W Emmel Box 340 University of Florida Gainesville

Michigan Detroit and Ann Arbor Oct. 12 13 *Examination* Sec Miss Eloise LeBeau 501 W Michigan Ave Lansing 15

Minnesota *Examination* Minneapolis Oct. 2 3 Sec Dr Raymond N Bieter 105 Millard Hall University of Minnesota Minneapolis

Nebraska *Examination* Omaha Oct 2 3 Director Bureau of Examining Boards Mr Oscar F Humble Room 1009 State Capitol Bldg Lincoln 9

Oklahoma Oklahoma City Sept. 14 Sec Dr Frank C Gallaher 813 Braniff Bldg Oklahoma City 4

Oregon *Examination.* Portland Sept. 8 and Dec 1 Sec Dr Charles D Byrne, State Board of Higher Education University of Oregon Eugene.

South Dakota *Examination* Vermillion, Dec 7-8 Sec Dr Gregg M Evans, 310 E 15th St Yankton

Texas *Examination* Austin October Chief Clerk Mr B H. Kirk, 306 Nalle Bldg Austin

Wisconsin *Examination* Madison Sept. 22 Sec Mr W H. Barber Ripon College, Ripon.

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* Basic Science Certificate required

DEATHS

Paullin, James Edgar ⊕ President of the American Medical Association, 1943-1944, died at his home in Atlanta, Aug 13, aged 69, of a heart attack Dr Paullin was born in Fort Gaines, Ga, Nov 3, 1881 After graduation from Mercer University with the degree of bachelor of arts in 1900, he continued as a graduate student throughout 1901 and then entered Johns Hopkins University School of Medicine, from which he received the degree of doctor of medicine in 1905 He also held LL D degrees from Mercer and Emory universities He turned briefly to pathology, acting as resident pathologist of the Rhode Island Hospital in Providence from 1905 to 1906, as resident in the Piedmont Hospital in 1906 1907, as pathologist to the Georgia State Board of Health from 1907 to 1911, and at the same time as associate professor of pathology of the Atlanta College of Physicians and Surgeons In 1909 he first turned his attention to internal medicine, acting as associate visiting physician to Grady Hospital from 1909 to 1913, and as adjunct professor of medicine at Atlanta Medical College from 1913 to 1915 With the outbreak of World War I Dr Paullin became a major in the Medical Corps of the United States Army and served as chief of the medical service in Camp Shelby, Miss He was a specialist certified by the American Board of Internal Medicine In the field of medical organizations he had come through the ranks of organized medicine, having been president of his county medical society in 1913 and of the Medical Association of Georgia, Chairman of the Section on Practice of Medicine of the American Medical Association in 1928, a member of the Council on Scientific Assembly from 1933 to 1942, serving as its chairman since 1937, and finally President of the American Medical Association in 1943 In the House of Delegates, where he had represented the Section on Practice of Medicine, he had been a member of many important reference committees as well as a member of the Committee on Medical Preparedness He was a fellow of the American College of Physicians, of which he had been president, and had served as master and at various times as regent and chairman of various committees Active in other scientific organizations, he served as president of the American Clinical and Climatological Society in 1937 and of the Interstate Postgraduate Medical Association 1946 1947, and as chairman of the Medical Section of the Southern Medical Association He was a member of the Association of American Physicians, since 1944 a corresponding member of the Society of Internal Medicine, Buenos Aires, and a member of the medical board of the National Foundation for Infantile Paralysis His eminence had been recognized by his election to Alpha Omega Alpha, and he had been guest professor of medicine at Peter Bent Brigham Hospital and at the Pratt Diagnostic Clinic of Tufts College Medical School in Boston With the beginning of preparations for World War II he was called early to the work of the Division of Medical Sciences of the National Research Council and gave largely of his time to the classification of specialists in the field of internal medicine In 1947 the President of the United States awarded him the Medal for Merit The citation specified exceptionally meritorious conduct in the performance of outstanding services to the United States since 1943 and explained that Dr Paullin served as honorary consultant to the Bureau of Medicine and Surgery of the Navy Department while also serving as a member of the directing board of the Procurement and Assignment Service of the War Manpower Commission Early in 1942 he had gone to Cuba to aid in the organization of the Finlay Institute of the Americas for securing interchange of medical science with the Latin American countries He was decorated by President Batista with the Order of Carlos Finlay In 1944 the Atlanta Chamber of Commerce awarded its annual Certificate of Distinguished Achievement to Dr Paullin In 1947 he was appointed a member of the Federal Hospital Council of the U S Public Health Service His scientific contributions included many papers published in leading periodicals At the time of his death Dr Paullin was a consultant for the Council on National Emergency Medical Service, American Medical Association, professor of clinical medicine at Emory University School of Medicine, visiting physician at Grady Hospital, and consulting physician at Piedmont Hospital

James Edgar Paullin
1881-1951

Lewis, Frederic Thomas, Boston, born in Cambridge, Mass, March 18, 1875 Harvard Medical School, Boston, 1901, from 1901 to 1902 Austin fellow in histology and embryology at his alma mater, where he continued as instructor from 1902 to 1906, assistant professor from 1906 to 1915, associate professor of embryology from 1915 to 1931, and James Stillman professor of comparative anatomy from 1931 to 1941, when he became James Stillman professor of comparative anatomy emeritus, member and past president and vice president of the American Association of Anatomists at one time vice president of the Boston Society of Natural History, fellow of the American Academy of Arts and Sciences and the American Association for the Advancement of Science, co-author of Text-Book of Histology", died June 2, aged 76, of coronary thrombosis

Arkin, Harry Samuel ⊕ Chicago, born April 22, 1893, Rush Medical College, Chicago 1917, assistant professor of medicine at Northwestern University Medical School, specialist certified by the American Board of Internal Medicine, member of the American College of Chest Physicians and the American Trudeau Society, served on the staffs of the Veterans Administration Hospital in Hines, Winfield (Ill) Tuberculosis Sanitarium, Cook County Hospital, Columbus Memorial Hospital, and Michael Reese Hospital where he died July 8, aged 58, of coronary thrombosis

Arvin, Hugh Torrance, Los Angeles, Bellevue Hospital Medical College, New York, 1892, at one time practiced in Greenville, Texas, where he was city physician, and served on the public school board, affiliated with California Hospital, Los Angeles General Hospital, and Angelus Hospital, died June 16, aged 81, of cerebral vascular accident

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⊕ Indicates Fellow of the American Medical Association.

Bennett, Edward Calvin, Ukiah, Calif, College of Physicians and Surgeons, Baltimore, 1912, member of the American Medical Association, past president of the Mendocino County Medical Association, received a presidential citation for his service as a member of the Selective Service during World War II, for the past six years did psychiatric work for the superior courts of Sonoma and Mendocino counties, died in Ukiah General Hospital, June 12, aged 62, of peptic ulcer and peritonitis

Block, Jacob M. ⊕ Ridgewood, N Y, Long Island College Hospital, Brooklyn, 1921, served on the staffs of the Wyckoff Heights and Bethany Deaconess hospitals in Brooklyn, past president of the Long Island College Alumni, died June 2, aged 51, of coronary insufficiency

Bookstaver, Barnet Seymour, Teaneck, N J, University and Bellevue Hospital Medical College, New York, 1908, member of the American Medical Association, served as director of health, medical director of schools, health officer, and police and fire surgeon, affiliated with Lebanon Hospital in New York and Holy Name Hospital, died June 26, aged 64, of coronary occlusion

Brandt, Herman D., St. Louis, Washington University School of Medicine, St. Louis, 1891, died June 16, aged 82, of cerebral hemorrhage

Bromley, Anthony Wayne, Louisa, Ky, Eclectic Medical Institute, Cincinnati, 1898, member of the American Medical Association, vice president of the First National Bank of Louisa, died June 17, aged 81

Burkel, Arthur Jacob ⊕ Buffalo, University of Buffalo School of Medicine, 1915, member of the Selective Service boards in his area during World Wars I and II, on the staff of Millard Fillmore Hospital, died in Peter Bent Brigham Hospital, Boston, June 15, aged 59, of acute myocardial infarction

Burns, James Edwin, Huntington Park, Calif, University of California Medical School, San Francisco, 1933, member of the American Medical Association, affiliated with Mission Hospital and with St. Francis Hospital in Lynwood, died June 19, aged 46, of spontaneous subarachnoid hemorrhage

Campbell, Arthur Lindly ⊕ Hatboro, Pa, University of Pennsylvania School of Medicine, Philadelphia, 1927, served on the school board, died June 4, aged 51, of coronary disease

Cerswell, Benjamin Samuel, Yakima, Wash., University of Toronto Faculty of Medicine, Toronto, Canada, 1907, member of the American Medical Association, died June 23, aged 77, of coronary insufficiency, carcinoma of the prostate, and diabetes mellitus.

Clohessy, Timothy Theodore ⊕ Phoenix, Ariz., University of Buffalo School of Medicine, 1894, died June 20, aged 78, of bronchogenic carcinoma

Curtin, John Francis, North Abington, Mass, Baltimore Medical College, 1906, member of the American Medical Association, served as medical examiner of the second Plymouth district, died June 4

DaHinden, Frank, Canton, Ohio, University of Wooster Medical Department, Cleveland, 1898, formerly health commissioner of Canton, died in State Hospital, Massillon, June 13, aged 76, of acute coronary insufficiency

Davis, John Allen, Roanoke, Va, University of Maryland School of Medicine, Baltimore, 1889, died June 19, aged 84, of kidney tumor

Davison, Glenn Huston ⊕ Pittsburgh University of Pittsburgh School of Medicine, 1919, associate professor of urology at his alma mater; specialist certified by the American Board of Urology; member of the American Urological Association, fellow of the American College of Surgeons, affiliated with St. Francis Hospital, where he died June 3, aged 60, of leukemia

Dingman, Cecil Walker ⊕ Major, U S Army, retired, San Francisco, University of Nebraska College of Medicine, Omaha, 1925, entered the medical corps of the regular army as a first lieutenant in July 1926, became a major in 1937, retired on April 30, 1942, for disability in line of duty; medical examiner for the United Air Lines, killed in an airplane crash June 29, aged 51

Donahoe, John Patrick ⊕ Scranton, Pa, Jefferson Medical College of Philadelphia, 1904, also a graduate in pharmacy, served during World War I, consultant at West Side Hospital, affiliated with Mercy, St. Mary s, and Scranton State hospitals, died June 4, aged 75, of carcinoma of the colon

Edgerton, Andrew Clifford, Clio, Mich, Detroit College of Medicine and Surgery, 1919, served on the staffs of Hurley Hospital and St Joseph Hospital in Flint, died in Alabaster June 24, aged 60, of coronary thrombosis

English, Glenn Greer ⊕ Captain, U S Navy, retired, North Hollywood, Calif, Indiana University School of Medicine, Indianapolis, 1922, served during World War II, retired May 1, 1949, died in San Fernando June 9, aged 53, of tuberculosis

Enselberg, Herman L. ⊕ Long Island City, N Y, University and Bellevue Hospital Medical College, New York, 1919, assistant clinical professor of obstetrics and gynecology at New York Medical College, Flower and Fifth Avenue Hospitals, New York, specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons, affiliated with Queens General Hospital in Jamaica, died June 15, aged 54

Farver, Moses A. ⊕ Middlebury, Ind, Baltimore Medical College, 1893, Associate Fellow of the American Medical Association, on the staff of the Elkhart (Ind) General Hospital, died June 29, aged 84, of mitral stenosis

Fredrickson, Frederick Olaf ⊕ Chicago, Rush Medical College, Chicago, 1908, assistant professor of medicine, emeritus, at the University of Illinois College of Physicians and Surgeons fellow of the American College of Physicians, specialist certified by the American Board of Internal Medicine, past president of the Illinois State Medical Society, served during World War I, formerly on the staff of Ravenswood Hospital, died July 6, aged 76

Gaffney, Emory Clizbe ⊕ Lincoln, Ill, the Hahnemann Medical College and Hospital, Chicago, 1905, member of the American Association of Railway Surgeons and the Association of Military Surgeons of the United States, for many years on the elementary grade school board of education, serving as its president, served during World War I, past president of the Logan County Medical Society, affiliated with Evangelical Deaconess Hospital, where he died June 1, aged 66, of nephritis

Gerard, Gabriel R., Chickasha, Okla, University Medical College of Kansas City, Mo, 1899, died in Madonna Hospital, Denison, Texas, May 8, aged 80

Gray, James Anthony, Watson, Mo, Central Medical College of St Joseph, 1903, served for two terms in the state house of representatives, died in Jefferson City June 6, aged 68, of coronary thrombosis

Harris, Emanuel, Somerset, Mass, Long Island College Hospital, Brooklyn, 1894, formerly city physician in Fall River, died in Truesdale Hospital, Fall River, July 5, aged 79, of cardiorenal disease

Heck, Ruth Elizabeth Vories, Rochester, Minn, University of Minnesota Medical School, Minneapolis, 1926, certified by the National Board of Medical Examiners, entered the Mayo Foundation as a fellow in pediatrics in October, 1926, and left the Mayo Foundation in April, 1928, died June 18, aged 57, of cardiac failure

Hedger, Caroline, Clinton, Conn, Northwestern University Woman s Medical School, Chicago, 1899, Rush Medical College, Chicago, 1904, for many years medical consultant for the Elizabeth McCormick Memorial Fund in Chicago, died July 10, aged 83, of Parkinson's disease and arteriosclerosis

Heksh, Bela Hajos, New York, Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1913, member of the American Medical Association, American Psychoanalytic Association, and the American Psychiatric Association served as a captain in the Austro-Hungarian Army during World War I, died June 11, aged 61

Higgins, Herbert Albert, Ardmore, Okla., Dallas Medical College, 1904, member of the American Medical Association, affiliated with Ardmore Sanitarium and Hospital and Hardy Sanitarium, died June 4, aged 77, of coronary occlusion

Hines, Julius Charles ⊕ Brooklyn, Meharry Medical College, Nashville, Tenn., 1933, affiliated with Unity Hospital, where he died June 1, aged 45, of coronary thrombosis

Hopkins, Granville A., Glenwood Springs, Colo., Denver and Gross College of Medicine, 1907, served as county coroner and was registrar of the bureau of vital statistics for the state and was city health officer, died June 2, aged 61, of carcinoma

Hyman, David Elihu ⊕ New York, Columbia University College of Physicians and Surgeons, New York, 1907, formerly on the staff of Mount Sinai Hospital, died June 20, aged 70, of coronary thrombosis

Igo Flitcroft, Louise M., Sacramento, Calif., University of Southern California School of Medicine, Los Angeles, 1906, member of the American Medical Association, died June 9, aged 84, of hypertensive cardiovascular disease and arteriosclerosis

Jones, Gerald Woodrow, Orlando, Fla., Emory University School of Medicine, Atlanta, 1943, member of the American Medical Association, formerly secretary of the Orange County Medical Society, served during World War II, on the staff of Orange Memorial Hospital, died June 5, aged 32, of carcinoma of the testicle with metastases

Jurney, Peter Claywell, Turnersburg, N. C., Medical College of Virginia, Richmond, 1901, died June 6, aged 76, of heart disease

Key, Elmore Benjamin, Meridian, Miss., University of Nashville (Tenn.) Medical Department, 1901, member of the American Medical Association, medical examiner for the aeronautics administration for many years, at one time medical superintendent of the Matty Hersee Hospital, died in Riley's Hospital June 9, aged 73, of arteriosclerosis

Leach, Sydney, Tuscaloosa, Ala., University of Virginia Department of Medicine, Charlottesville, 1896, member of the American Medical Association, affiliated with Bryce Hospital, died in Montgomery, in May, aged 76, of pulmonary embolus

Leavitt, Mary Augusta, Boston, Boston University School of Medicine, 1902, served on the faculty of her alma mater, member of the American Medical Association, died May 2, aged 74

Lien, Fred Oscar ⊕ Merced, Calif., University of Illinois College of Medicine, Chicago, 1914, served during World War I, on the staffs of Merced General Hospital and Mater Misericordiae Hospital, where he died June 23, aged 64, of carcinoma of the colon

Lindquist, Gustav Herman, Worcester, Mass., Middlesex University School of Medicine, Waltham, 1919, on the staff of the Fairlawn Hospital, died in City Hospital June 30, aged 69, of cerebral vascular accident.

Loftis, William Osler ⊕ Alexandria, La., University of Arkansas School of Medicine, Little Rock, 1934, member of the Arkansas Medical Society, served during World War II, affiliated with the Veterans Administration Hospital, where he died May 12, aged 41

Lupton, Albert Marsee ⊕ Philadelphia, Jefferson Medical College of Philadelphia, 1939, specialist certified by the American Board of Internal Medicine, served during World War II, affiliated with Hahnemann Hospital, died June 28, aged 36

Macdonald, John William ⊕ St. Louis, St. Louis University School of Medicine, 1905, an Associate Fellow of the American Medical Association, served during the Spanish American War and World War I, died in Christiansted, Virgin Islands, June 3, aged 73, of cerebral hemorrhage

MacNaughton, Luther Donald, Eagle Grove, Iowa, Drake University Medical Department, Des Moines, 1897, member of the American Medical Association, died in Fort Dodge June 11, aged 80, of carcinoma of the prostate

MacLean, Lester, Chicago, University of Minnesota Medical School, Minneapolis, 1943, member of the American Medical Association, specialist certified by the American Board of Psychiatry and Neurology, assistant professor of psychiatry at the University of Illinois College of Medicine, a founder of the Park Forest school district, served during World War II, accidentally drowned at Farm Island Lake near Aitken, Minn., July 6, aged 33

Mahoney, Charles Frederick, Winthrop, Mass., Tufts College Medical School, Boston, 1906, member of the American Medical Association, served on the board of health and as school physician, affiliated with Winthrop Community Hospital, died in Boston June 10, aged 68, of cerebral hemorrhage

Mann, Ira Thurman ⊕ High Point, N. C., Jefferson Medical College of Philadelphia, 1912, died May 13, aged 62, of coronary thrombosis

Mantinband, Jacob, New York, Columbia University College of Physicians and Surgeons, New York, 1900, member of the American Medical Association, medical officer for the board of education, affiliated with Gouveneur Hospital, Roosevelt Hospital, and New York Polyclinic Hospital, died June 3, aged 72

Maples, William Ellis, Athens, Ala., University of Nashville (Tenn.) Medical Department, 1903, member of the American Medical Association, died in Decatur May 27, aged 76, of coronary occlusion

Marcou, Louis Benjamin, Berlin, N. H., University of Vermont College of Medicine, Burlington, 1899, member of the American Medical Association, fellow of the American College of Surgeons, served during World War I, formerly member of the school board, affiliated with St. Louis Hospital, where he died June 14, aged 77, of arteriosclerotic heart disease

Mars, Jesse Durland, Florida, N. Y., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904, member of the American Medical Association, health officer and school physician, past president of the Orange County Medical Association, affiliated with the Goshen (N. Y.) Hospital, where he died June 9, aged 70, of coronary thrombosis

McCracken, Robert X., Belleville, Ill., St. Louis Medical College, 1890, member of the American Medical Association, formerly county coroner and health commissioner of East St. Louis, died in St. Mary's Hospital, East St. Louis, June 18, aged 87, of cerebral hemorrhage and arteriosclerosis

McGavern, John Harrison, Honeoye Falls, N. Y., Syracuse University College of Medicine, 1929, member of the American Medical Association, died in Rochester, N. Y., July 7, aged 48, of myocardial infarction

McGunagle, Joseph Elmer, Miami, Fla., Vanderbilt University School of Medicine, Nashville, Tenn., 1912, member of the American Medical Association, died June 5, aged 65, of metastatic carcinoma of the brain

Merry, Charles Raymond, Washington, D. C., Meharry Medical College, Nashville, Tenn., 1939, assistant physician on the staff of the Howard University Health Service on a temporary part time basis, died May 28, aged 37, of pulmonary insufficiency

Mills, Edgar Stuart, Chicago, Rush Medical College, Chicago, 1928, medical director of the Central Standard Life Insurance Company, died June 4, aged 61, of myocardial infarction and coronary sclerosis

Mitchell, Horace Ervin ⊕ Lakewood, Ohio, Jefferson Medical College of Philadelphia, 1912, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology, American Laryngological, Rhinological and Otological Society and the American Broncho-Esophagological Association, fellow of the American College of Surgeons, served on the staffs of Fairview Park Hospital in Cleveland and Lakewood Hospital, died June 21, aged 63, of coronary disease

Montgomery, John W., Birds, Ill., Hospital College of Medicine, Louisville, Ky., 1897, member of the American Medical Association, died June 22, aged 75, of arteriosclerosis

Moore, Elisha Merriweather, Prattville, Ala, University of Alabama School of Medicine, 1911, member of the American Medical Association, served as health officer of Autauga and Chilton counties, died June 21, aged 65

Morris, Henry Thomas, Greenup, Ky, Kentucky School of Medicine, Louisville, 1897, member of the American Medical Association, served two terms in the state senate, past president of the Greenup Chamber of Commerce, died May 23, aged 82, of acute cardiac dilatation.

Morris, Julian H, Dallas, Texas, University of Virginia Department of Medicine, Charlottesville, 1901, member of the American Medical Association, died June 9, aged 70, of heart disease and arteriosclerosis

Morrison, Hector ⊕ Smith Center, Kan, University of Toronto Faculty of Medicine, Toronto, Canada, 1900, served during World War I, died June 6, aged 81, of coronary thrombosis

Nelson, Bernard, Chicago, University of the City of New York Medical Department, 1895, died June 15, aged 82, of cerebral hemorrhage and arteriosclerosis

Nelson, Henry S, ⊕ Minneapolis, University of Minnesota College of Medicine and Surgery, Minneapolis, 1893, an Associate Fellow of the American Medical Association, at one time county coroner, died June 8, aged 86, of bronchopneumonia

Nolan, John William, El Dorado, Ark., University of Arkansas School of Medicine, Little Rock, 1916, died June 1, aged 70

Nossen, Herbert Ludwig W ⊕ New York Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1920, member of the Rudolph Virchow Society and the Association for Advancement of Psychotherapy, served with the German Army during World War I, author of "Twelve Against Alcoholism", died in Beth Israel Hospital June 2, aged 55, of chronic glomerulonephritis

Nunnery, Ernest Ezra, Everglades, Fla, University of Nashville (Tenn) Medical Department, 1907, member of the American Medical Association, served during World War I, lieutenant colonel in the medical reserve corps of the U S Army, served in the Veterans Administration in Wichita, Kan, during World War II, physician in charge of Juliet C Collier Hospital, died in Miami, May 1, aged 66, of coronary occlusion

Orenstein, Archie ⊕ Hilo, Hawaii, University of Pennsylvania School of Medicine, Philadelphia, 1919, served as vice president of the Hawaii Territorial Medical Association, killed in plane crash in Colorado June 29, aged 55

Ormerod, Henry V, Niles, Ohio University of Wooster Medical Department, Cleveland, 1898, member of the American Medical Association, affiliated with Trumbull Memorial Hospital, where he died July 3, aged 86, of cerebral vascular disease

Ossip, Abraham ⊕ New York, New York Homeopathic Medical College and Hospital, New York, 1918, specialist certified by the American Board of Radiology, member of the Radiological Society of North America and the American College of Radiology, associate attending radiologist, New York Post Graduate Dispensary, died in Beth Israel Hospital July 3, aged 62, of pulmonary infarction

Owen, Leartus J ⊕ Colonel, U S Army, retired, Charlottesville, Va., University of Virginia Department of Medicine, Charlottesville, 1900, College of Physicians and Surgeons, Baltimore, 1904, entered the regular army on May 23, 1904 served during World War I, became a colonel in 1930, retired Nov 30, 1932 for disability in line of duty, fellow of the American College of Surgeons, died in the University of Virginia Hospital June 2, aged 72, of hyperpyrexia

Padgett, Everett Ervin ⊕ Indianapolis, Rush Medical College, Chicago 1905 assistant professor of surgery at Indiana University School of Medicine, fellow of the American College of Surgeons, past president of the Indiana State Medical Association, at one time president of the city board of health on the staffs of Indiana University Hospital St Vincent's Hospital, General Hospital, and Methodist Hospital, where he died May 24, aged 72, of coronary occlusion

Palen, Neil Bertram ⊕ Walden, N Y, Albany (N Y) Medical College 1909, died in St. Luke's Hospital, Newburgh, July 4, aged 68, of chronic coronary insufficiency

Parsons, Frank Sears, Boston, University of the City of New York Medical Department, New York, 1886, affiliated with Harley Hospital, died in Deaconess Hospital June 4, aged 88, of carcinoma of the prostate

Partee, William Eugene Jr., Norfolk, Va, College of Physicians and Surgeons, Boston, 1942, affiliated with Norfolk Community Hospital, died May 13, aged 62

Peake, William Marion, Long Beach, Calif, University of Colorado School of Medicine, Denver, 1930 member of the American Medical Association, served during World War II, died in June, aged 45

Pearson, Walter J, Kansas City, Mo, University of Kansas School of Medicine, Kansas City, 1907, member of the American Medical Association and the Kansas Medical Society, honorary member of the staffs of Bethany and Providence hospitals, at one time school principal, died June 1, aged 86, of coronary occlusion

Perry, Malcolm Oliver, Allen, Texas, Fort Worth School of Medicine, Medical Department of Texas Christian University, 1917, died in Dallas May 27, aged 75, of acute myocardial infarction

Phipps, Rufus Luther ⊕ Clintwood, Va, Louisville and Hospital Medical College, Louisville, Ky, 1908, served as vice president of the Medical Society of Virginia, president of the Clinch Valley Medical Society, and president of the Dickenson Buchanan Counties Medical Society medical advisor for the Selective Service in the county, and county coroner, physician in charge and owner of Dickenson County Hospital, died in the Medical College of Virginia Hospital Division, Richmond, July 13, aged 69, of acute renal failure

Renaker, John Gano, Covington, Ky Louisville (Ky) Medical College, 1898, affiliated with St Elizabeth Hospital, died May 30, aged 73, of heart disease

Ruethin, Knute Albin ⊕ Costa Mesa, Calif, Bennett Medical College, Chicago, 1910, an Associate Fellow of the American Medical Association, member of the State Medical Society of Wisconsin, died in Hudson, Wis, June 13, aged 78, of coronary occlusion

Schick, Frank Joseph ⊕ Chicago University of Illinois College of Medicine, Chicago, 1915, died in Kenora, Ont, Canada, July 2, aged 59, of heart disease

Schoening, John Jacob, Philadelphia, Jefferson Medical College of Philadelphia 1906, member of the American Medical Association, served with the division of medical services of the public schools, on the staff of the Stetson Hospital, where he died June 20, aged 66, of pulmonary embolus

Scott, Lockburn Burton, Norfolk, Va, Manitoba Medical College, Winnipeg Man, Canada, 1907, member of the American Medical Association, for many years secretary-treasurer of the Norfolk County Medical Society, died May 17, aged 89, of arteriosclerosis

Smith, Wiley J S., Fouke, Ark. (licensed in Arkansas in 1903), died May 25, aged 93

Sonnenburg, Willard Michael, Sheboygan, Wis, Harvard Medical School, Boston, 1921, member of the American Medical Association, served as mayor of Sheboygan and as county physician, affiliated with St Nicholas and Sheboygan Memorial hospitals, past president of the Sheboygan County Conservation Alliance, died March 13, aged 56, of acute myocardial infarction

Tapper, George Washington, Monona, Iowa, State University of Iowa College of Medicine, Iowa City, 1896, died May 24, aged 81, of metastatic carcinoma

Waller, Charles Edward, Troy, Kan, Ensworth Medical College, St Joseph, Mo, 1903, member of the American Medical Association, died in St Joseph, Mo, May 19, aged 72, of arteriosclerotic heart disease

GOVERNMENT SERVICES

AIR FORCE

New Base Medical Group Chief.—Maj. Irving L. Leff, formerly director of professional services in the Air Surgeon's office at Headquarters Central Air Defense Force, Kansas City, Mo., has been reassigned to Larson Air Force Base, Washington, where he will assume command of the Base Medical Group and be in charge of a 75 bed hospital. A rated Flight Surgeon, Major Leff is a graduate of the Medical Field Service School and the AAF School of Aviation Medicine.

Office of Surgeon General Moves to New Location.—The Office of the Surgeon General of the Air Force has moved from the Pentagon to Temporary Building No. 8, at 3800 Newark St., Northwest. The building is located in the northwest section of Washington, just off Wisconsin Avenue at the corner of 39th and Newark streets. The new telephone code number is 192 (ORdway 9600). Mail and telegraphic address remains the same as before: Headquarters, USAF, Washington 25, D. C.

Training in Survival.—How to live off the land in isolated mountain strongholds and arctic wastes was the subject of a recent talk at the Randolph Field School of Aviation Medicine by Maj. George R. Steinkamp, surgeon of the Strategic Air Command's survival school at Camp Carson, Colo. Major Steinkamp spoke to the current class of aviation medical examiners at the aero medical school. Flyers in modern long range bombers are likely to find themselves in wild and unfriendly places if they have to bail out or are forced down. To show them how they can maintain themselves in unfamiliar surroundings until rescuers reach them is the purpose of the survival school. Air crewmen at Camp Carson are taught survival procedures under conditions that closely simulate those of an actual emergency. Major Steinkamp exhibited to the student officers—some of whom may find themselves in B 36 squadrons later on—the special equipment which SAC researchers have designed to help airmen take care of themselves in the wilds. With these lightweight survival kits a downed crew member can build his own shelter, protect himself from icy winds or snow, and even bring down a passing moose for dinner.

ARMY

Neuropsychiatric Service Appointment.—Col. Charles S. Gersoni, MSC, has been named chief of the clinical psychology section of the neuropsychiatric service at Walter Reed Army Hospital. For the past four years, Colonel Gersoni has been the chief of the clinical psychology branch of the psychiatry and neurology consultants division of the Army Surgeon General's Office. He has been succeeded in the latter position by Lt. Col. Frederick A. Zehrer, MSC.

NAVY

Preventive Medicine.—Lt. (J G) Robert E. Mytinger, MSC, USN, of the preventive medicine division, will represent the Bureau of Medicine and Surgery, Aug. 20 27 at the National Convention of the National Association of Sanitarians, meeting at Miami Beach, Fla. Lieutenant Mytinger will present a paper on "Navy Training in Preventive Medicine."

Conference on Filariasis.—Lt. Leo A. Jachowski, MSC, USN, a parasitologist at the naval medical research unit of the National Naval Medical Center, Bethesda, Md., will represent the Navy at a conference of experts on filariasis and elephantiasis being held at Papeete, Tahiti, Aug. 20 to Sept. 3, 1951. The conference has been called by the South Pacific Commission on Filariasis and Elephantiasis, composed of members from the United Kingdom, France, Netherlands, New Zealand, Australia, and the United States, to discuss postwar research results that have not been published. The commission intends to compile all data for future publication.

Inspection Tour of Naval Medical Facilities.—Rear Adm. Lamont Pugh, Surgeon General of the Navy, returned Aug. 8 to Washington after a personal inspection tour of naval medical facilities in the Pacific Ocean area and the Far East including Korea. The Surgeon General found morale high among Navy medical department personnel and praised the readiness of the Navy medical facilities. Admiral Pugh said "procurement of blood and blood derivatives for use in Armed Forces medical installations still remains one of the outstanding major problems facing the country today." The use of whole blood and blood derivatives in continental Armed Forces hospitals for treatment of personnel of the Armed Forces, not necessarily Korean casualties, has not decreased. There has been a serious drain on existing stockpiles which require immediate replacement.

Rapid Mass Blood Count Method.—A new red blood cell counter that will greatly increase the speed of mass blood counts has been developed by Cornell University under an Office of Naval Research contract. Using the new instrument, which relates the red cell count to the electrical conductivity of whole blood, three technicians can perform 40 to 60 blood counts an hour by "production line" methods, as compared to the present rate of about 12 to 18 an hour. Errors in the visual blood counting methods now used are avoided in the new instrument, since there is no dilution of the blood and the quantity used is not critical.

The counter was developed by Dr. I. S. Wright, Dr. Erwin Sheppard, and Professor W. C. Ballard Jr., of Cornell University, as part of a naval research study of the electrostatic forces in the blood and their relation to coagulation. Mass blood counts are vitally necessary under battle conditions in estimating damage due to hemorrhage, shock, flash burns, and exposure to ionizing radiations. The new method will also be helpful in making routine hospital blood counts and in screening men for military service.

VETERANS ADMINISTRATION

New Hospital Manager.—Dr. Leland E. Stillwell, chief of professional services at the Jefferson Barracks, Mo., Veterans Administration Hospital, has been appointed manager of the 500-bed VA hospital under construction at Iowa City, Iowa. Dr. Stillwell, a veteran of both World Wars, joined the VA Department of Medicine and Surgery in his present capacity in February, 1946.

Neurology and Psychiatry Residents.—Several openings are available in the residency training programs in neurology and in psychiatry at the Veterans Administration Hospital, Coatesville, Pa. The programs were organized by the Philadelphia Deans Committee. Both residencies cover a period of three years or less depending on the previous experience of an applicant, and are designed to prepare residents for certification in neurology or psychiatry by the American Board of Psychiatry and Neurology. The programs include rotation through the Veterans Administration Hospital, Coatesville, Pa., Veterans Administration Mental Hygiene Clinic, Philadelphia, the Philadelphia General Hospital, and university and hospital outpatient clinics associated with Philadelphia's five medical schools. Applications should be sent to Vincent T. Lathbury, M.D., Executive Psychiatrist, Philadelphia Deans Committee, 111 N. 49th St., Philadelphia 39, Pa.

FOREIGN LETTERS

NORWAY

New Chairs of Medicine and Surgery—In Oslo, the teaching of medical students has become increasingly dependent on institutions outside the old Rikshospital, particularly the Oslo City Hosptial, Ullevaal In March, 1951, the title of professor was conferred on the heads of the chief departments at Ullevaal and on the head of the state asylum at Gaustad, Dr Ørnulf Ødegaard. Dr Ødegaard was born in 1901 and qualified as a doctor in 1925, becoming a doctor of medicine in 1933 He has been at the head of the Gaustad asylum since 1938 The promotion of Dr C A Muller of Ullevaal to one of the new chairs of medicine comes comparatively late in life He was born in 1886 and qualified as a doctor in 1910 Since 1928 he has been at the head of Department VIII of Ullevaal Hospital Beloved by patients, students, and nurses, he also has an international reputation based on his work as a clinician and on his cardiovascular studies. The xanthomatosis and allied conditions described by him are known in the Scandinavian countries as Müller s disease

Among the new professors is a younger man, Dr H J Ustvedt who was born in 1903 and who is already well known abroad in connection with his work on tuberculosis and his participation in the International Tuberculosis Campaign Since 1946 he has been at the head of Department IX of Ullevaal Hospital Also on the medical side are the two new professors, Dr R T Hatlehol, born in 1886, and Dr P M Holst born in 1892 On the surgical side there are two new professors, Dr C Rosing Bull, born in 1893, and Dr C B Semb, born in 1895 Prof Semb has been the chairman of the Norwegian Surgical Society since 1939 In May of this year he left Norway for Korea to supervise the Norwegian hospital there Between 1945 and 1947 he was at the head of the Norwegian Army Medical Service His contributions to the surgical treatment of pulmonary tuberculosis are familiar to many outside as well as inside the Scandinavian countries

Sex Habits of Young Men—Dr Tore Berdal, of the Norwegian Army Medical Service, has undertaken a sort of Kinsey survey of the Norwegian soldiers who served in the army of occupation in Germany in 1949 A questionnaire was addressed to 2,750 privates and corporals, of whom 2,717 replied The drafting of these answers was not compulsory, yet only about 1% of the recipients of the questionnaires left them blank About 42% had had sexual intercourse during their six months' sojourn in Germany, and approximately one third of the Norwegian forces in Germany must have had sexual intercourse with women more or less unknown to them In Berdal's opinion this percentage is surprisingly high considering that fraternizing with the Germans was not permitted The frequency of sexual intercourse was considerably lower (35 4%) among soldiers recruited from country districts in Norway than among soldiers from towns (58 4%) A comparison of the sexual intercourse rate among soldiers serving for six months at home and in Germany, respectively, showed little difference, 50 7% for Norway as compared with 43% for Germany

Berdal's Table 7 deals with 1,621 soldiers who had not indulged in sexual intercourse throughout their sojourn in Germany and who gave their reasons for not doing so Fear of venereal disease accounted for this in 23 6%, a permanent liaison at home for 19 7%, moral considerations for 9 4%, betrothal for 7%, marriage for 3 8%, religious considerations for 1 8% various combinations of the above considerations for 31%, and other considerations for 3 6%

Berdal's investigations also throw some light on condoms and their efficacy in preventing venereal disease They were employed in 36% of a total of 8,470 sexual contacts made by 1,042 soldiers In 543 cases the reasons that condoms were not employed were analyzed In 59 3% the reason given was lack of a condom, in 14 4% it was considered unnecessary, as the women were supposed to be healthy, and in 7 5% it was dispensed with for ethical reasons, because it seemed unnatural Other reasons that no condom was used were negligence due to alcohol, thoughtlessness, or the like Berdal comments that as most of the women involved were strangers to the soldiers, it is remarkable that so few of them used condoms He also quotes figures to show how effective condoms are in preventing venereal disease

Completion of the International Tuberculosis Campaign—Prof H J Ustvedt, formerly deputy director of the International Tuberculosis Campaign, pointed out on June 30 that this date marked the completion of the International Tuberculosis Campaign It was created in the winter of 1948 by the Danish and Swedish National Red Cross Societies, Norwegian Aid to Europe, and the United Nations International Children's Emergency Fund (UNICEF) This organization could provide dollars, and the Scandinavian organizations could supply expert personnel The International Tuberculosis Campaign began its work in eight European countries to which teams were sent Their activities spread to Asia, to North Africa, and, finally, to Latin America The completion of the program, on June 30, 1951, does not mean that BCG vaccination has ceased on a large scale but that henceforth the World Health Organization has shouldered all the responsibility for this action with the continued economic support of UNICEF While the International Tuberculosis Campaign was largely centralized in the Scandinavian countries, with headquarters in Copenhagen, the activities of the World Health Organization will be regional, with Geneva as the coordinating center

With respect to the activities in the past three and a half years of the International Tuberculosis Campaign, Prof Ustvedt pointed out that, though more than 38 million human beings have been tested with tuberculin and more than 17 million have been vaccinated with BCG, it is at present impossible to say to what extent this action has reduced the incidence of tuberculosis A remarkable reduction in the incidence of tuberculous meningitis among children has been observed in certain European countries, and it may well be that this is the first observable outcome of BCG vaccination Norway s contribution to this work has included 30 doctors and 46 nurses sent abroad with the BCG teams Prof Ustvedt concluded that these health missionaries to foreign countries are an admirable illustration of what small nations can do by peaceful means to promote world unification

Norwegian Medical Film Archive.—Collection and distribution of educational medical films have not heretofore been centralized in Norway Realizing the importance of this matter, Dr Jens Bjorneboe, who edits the medical-scientific work of the organ of the Norwegian Medical Association, *Tidsskrift for Den Norske Laegeforening*, has lately taken an active part in negotiations which have now led to the centralization of these films in an organization known as the Norwegian Medical Film Archive Among its sponsors are the Norwegian Medical Association, the Norwegian Ministry of Health and the Faculty of Medicine The new organization is affiliated with the Norwegian State Film Center, whose large staff of well trained experts can be relied on to give invaluable aid to this new body Hospitals and persons in the possession of medical films are invited to help this new body by loans and gifts Gifts of medical films have already come from abroad, and it is hoped that the Norwegian Medical Film Archive will achieve its aim of acting as a center for lending educational films to all who can make proper use of them The address is Norsk Medisinsk Filmarkiv, Statens Filmsentral, Kronprinsens gate 10 b Oslo, Norway

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The items in these letters are contributed by regular correspondents in the various foreign countries

SWITZERLAND

Swiss Society for Internal Medicine.—The nineteenth annual meeting of the Swiss Society of Internal Medicine, under the chairmanship of Prof P H Rossier (Zurich), was held in Coire June 1-3, 1951 These annual meetings are the main medical events of Switzerland This year, the charming city of Coire, surrounded by mountains, welcomed over 250 specialists Three principal interests were apparent cardiology, hematology, and internal medicine

The meeting of the cardiologists was attended by physicians from all parts of the country Many foreign physicians had been invited, among them Dr Frau (Milan), who opened the scientific session by showing the remarkable results of research on the dog concerning intraventricular conduction Dr Gilimann (Dusseldorf) presented an interesting study on the cardiac vectors

From the hematologists came interesting reports on tapeworm anemia, the mechanism of which seems to have been made clear by Finnish authors Prof Heilmeyer, the German internist, drew attention to the use of cobalt in some anemias of the Cooley type, which do not respond to iron The communication of Prof Alder (Aarau, Switzerland) lessened the enthusiasm of those who thought of being able to count on effective treatment of leukemia, despite the great number of publications on this subject, transfusions are still the only effective supportive treatment of this disease Even triethylenemelamine does not seem to give the results expected of it

Prof Rossier delivered a paper on relativity of numbers and of statistical methods in medicine Prof Hamburger (Paris) reported on the treatment of nephropathy He discussed the osmotic and acid-base regulation of fluids and described two syndromes caused by hyperosmosis with cellular dehydration Among the new treatments of nephritis, he discussed the intestinal perfusions undertaken in Paris

The following day was devoted to arterial hypertension In his report on medical treatment, Dr J J Mozer (Geneva) warned against certain drugs which, given at the beginning of hospitalization, seem to have a hypotensive action, when mere rest can reduce the blood pressure and cause regression of eyeground changes

Prof Fontaine (Strasbourg, France) discussed the surgical treatment of arterial hypertension He outlined the history of surgery of the sympathetic chain and of the adrenal gland He favors subdiaphragmatic extirpation of the sympathetic system followed by unilateral adrenalectomy Fontaine listed the indications for this operation He pointed out that physicians and surgeons disagreed about the indications for this operation There is no international classification of the different phases of hypertension The value of the operation should not be judged according to the amount of hypertension before and after surgery The patients who have undergone operation may be in perfect health even though their hypertension has been little modified Prof Rothlin (Bâle) emphasized the benefits of hydergin" (ergot alkaloid mixture), which seems to be most effective when there are phenomena of autonomic dysfunction Prof Schoen (Gottingen, Germany) pointed out the value of physical therapy in the treatment of hypertension Prof Brunner and Dr Dimtza opposed radical surgery and expressed the hope that it would soon be supplanted by medical treatment. Prof Vannotti (Lausanne) agreed with Prof. Brunner and Dr Dimtza

ECUADOR

Mass Vaccination with BCG.—Mass vaccination is to be carried out throughout Ecuador Up to now, more than 150,000 vaccinations given to children have resulted in negative reactions to the tuberculin test (Mantoux) The vaccination campaign is directed by Dr Jorge A Higgins of Ecuador Swiss and North American doctors are also participating in the campaign

CORRESPONDENCE

TOTAL POPULATION X RAY SURVEYS

To the Editor—THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of July 7, 1951, carried an editorial on 'The Value of Total Population X Ray Surveys," which is based on reports of a study made in Gotland, an isolated Swedish island, and reported by Dr L Lonnerblad This editorial, we believe, will be interpreted by many physicians as an indictment of community wide chest x ray surveys as they are being done in this country It is our sincere hope that it was not the intention of the editorial staff to convey this impression

After carefully studying this editorial and the original article published in *Acta Radiologica,* December, 1950, it is our considered impression that Dr Lonnerblad, far from arguing the case against total population x ray surveys alone, is presenting a case which in his experience is against the total tuberculosis control program as we know it in this country

Very little of the text of Dr Lonnerblad s article concerns itself with discussion of x ray surveys, and the part of the article that is concerned with a critique of x-ray surveys is based on a photofluorography examination of the entire population of Gotland in 1943 Dr Lonnerblad states Although the data from the photofluorography mass examination attempted on the entire population of Gotland made in 1943 *has not yet* been fully analyzed, it in a measure *seems* to confirm my hypotheses of 1942, viz., that a total population chest survey does not yield any conclusive results' (italics mine) While the article does state that 99% of the population were examined, no reference is made to other factors that have to do with the tuberculosis death rates, for instance, the type and extent of follow up work, facilities for hospitalization and other forms of treatment, and the economic status of the population as it affects nutrition, housing, working conditions, and recreation Certainly mass x-ray surveys cannot accomplish anything without the presence of these other factors, consequently, it is unfair to assume on this basis alone that x ray surveys have no value

It would seem to be a fair assumption that x ray surveys are not a source of hindrance to the tuberculosis program The only issue, therefore, is whether they are of any help A priori, it must be admitted that one cannot consistently hit a mark unless he knows what he is shooting at, and where he is shooting This is the sole purpose of x ray surveys and would appear to be a self-evident aid to the tuberculosis control program But, passing from the theoretical to practical experience, during the past five years in Florida over 1,700,000 persons have received x ray survey examinations Communities in this state have averaged a chest x-ray examination about once every 18 months instead of once in seven years, apparently as was the case in Gotland, since we do not have information to the contrary The tuberculosis death rate has consistently declined, to an all time low of 17 per 100,000 in Florida during the first five months of 1951 The fact that there appears to be any decline at all is most significant, since the rate has reached such low levels that it is now within the orbit of the law of diminishing returns While no one is so naive as to assume that the x ray surveys alone are responsible for the declining death rates, it would seem equally unsound to allege that x ray surveys have not been an important factor

Dr Lonnerblad points out in his article that the death rate from tuberculosis in Gotland has not decreased appreciably over that in Sweden, but a table in the article by Dr Lonnerblad certainly does not bear out this statement In the year 1942 there were 0 96 deaths per thousand inhabitants in Gotland as against 0 68 deaths per thousand in Sweden as a whole This had decreased to a point in 1947 where there were 0 49 deaths per thousand population in Gotland as against 0 48 deaths per thousand in Sweden as a whole (Incidentally, the editorial in THE JOURNAL quoted this figure incorrectly, since it states the tuberculosis mortality rate for Gotland in 1946 was 0 54 per 100)

Dr. Lonnerblad in his discussion points out the inadequacy of our weapons in treating tuberculosis once the disease has been uncovered. He states "Under existing conditions it would probably be necessary to intervene before the infection has taken place and thus accomplish what is done against other very frequent epidemic and endemic diseases, that is, perform mass inoculation in order to reduce the incidence of tuberculosis and thus avert the problems which naturally result. . . . It is not out of step to center our entire attention on the improvement of resistance of the entire population in a manner similar to that adopted for other very definite infectious diseases, e. g., typhoid fever. . . . With the advent of BCG vaccination we have at our disposal an additional agency of considerable protective value."

This, if I interpret Dr. Lonnerblad's article correctly, is the main thesis presented, and not an argument against x-ray surveys per se.

It is interesting that Dr. Lonnerblad mentions Dr. Arvid Wallgren in his discussion on the value of BCG. This same well-known author from Sweden stated: "On the other hand, one should not exaggerate the efficiency of BCG vaccinations. At best they may protect against the immediate consequence of virulent infection and diminish the incidence of primary and early post-primary tuberculosis. In my opinion there is no prophylactic influence on the development of late manifestations of post-primary tuberculosis." (*Trans. National Association Prevention of Tuberculosis*, London, England, 1949.)

Certainly, in this country, where improved economic conditions, education, and rapidly expanding hospital facilities for isolation and treatment of active tuberculosis are combined with organized case-finding programs to insure the downward trend of the death rate, which is now the lowest on record, one could not advocate the general use of BCG.

After reviewing the editorial at issue and the abstract of the original article in THE JOURNAL, I am of the opinion that the main point of Dr. Lonnerblad's paper has been overlooked. In spite of the title of the article, it should be apparent to the reader that this paper represents a strong argument for the use of BCG in Gotland rather than a criticism of the value of community-wide x-ray surveys.

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NERVE BLOCKING AND PAIN

To the Editor:—The June 30 issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION contains a group of excellent papers, presenting results in various pain syndromes following block of the stellate ganglion, various nerves or infiltration of painful tissues. Although in some instances the results are remarkable, the authors were unable to explain the reason for the relief in many cases. For example, Adams, in his article "Diagnostic and Therapeutic Block" (page 803), recalled a patient "who had a small painful area in the chest wall, which affected his life considerably. He had it for three years and was most discouraged. He did not appear to be neurotic, but this small area of pain was coloring his whole life. The cause of his pain was not obvious but for diagnosis, I blocked the area involved. He obtained immediate relief and was dismissed when he was pain free for 48 hours. After three months he wrote me that his pain had not returned and that he could put in a comfortable day's work for the first time in three years.

"I do not yet know the origin or basis for this man's pain. The block therapy in his case was more or less a stab in the dark, but it produced results. In a neurotic patient who interprets even pressure as pain, this type of therapy would not have worked."

There is no doubt that definite relief of painful syndromes can be accomplished in many instances by successful nerve blocks, for example, trigeminal neuralgia, intracostal neuralgia, and pain secondary to fractured ribs and pleurisy. The literature is full of reports on excellent results following local and paravertebral block for painful syndromes, and in many of these cases the operator does not know the etiology of the pain. He is not sure of the position of his needles and may not have reached the ganglion or nerve with the injected material. Pender and Pugh (page 798 of the same issue of THE JOURNAL) have realized this difficulty and stress the use of roentgenograms to actually place and check the position of the needles.

I believe that those doing therapeutic nerve blocks for the relief of pain and other conditions would obtain a truer picture of the value of their procedure and also obtain a more accurate evaluation of the effect of "suggestion and the laying on of hands" if they would make it a rule to always precede the attempt at direct blocking by first trying a series of five to 10 intradermal wheels with sterile water placed at random in the skin area overlying the pain. Careful notes should then be made as to the relief of pain, if any, how soon it occurred, and how long it lasted. The results following this test, if unsuccessful or partially so, should then be compared with those following a definite attempt to block the nerve, ganglion, or tissue. I believe that such an approach to therapeutic nerve blocks would not only help to evaluate the patient with a hysterical or functional background but would also give the operator a better conception of what his procedure really accomplishes.

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THE SURGEONS' FRONTIER

To the Editor:—Today's medical graduate faces the same problem that has confronted his predecessors. How shall he best develop his capacities and where shall he practice so as to best serve his patients and himself? Years ago young men were urged to go west and grow up with the country. Now the cities of the West are as crowded as those of the East. Where is today's frontier? For the surgeon the county seat town offers a challenge for his specialized services.

Staff appointment to the hospitals in these areas does not require certification by a board, but thorough training in general surgery is needed. These surgeons must be versatile. They must know their way around the abdomen and be competent to handle emergency situations in orthopedics, urology, and gynecology. They must be able to reduce fractures, use the cystoscope and perform cesarian sections. General surgery in the county seat town is all that the name implies. The surgeon is limited only by his ability and integrity in his efforts to save life.

Almost every county seat town in the country offers a place where a good surgeon is badly needed and where he can be successful if he knows how to properly utilize his knowledge. Communities where no other doctor is limiting his practice to general surgery present a golden opportunity. Naturally there will always be a number of general practitioners doing some surgery. The newcomer should not be discouraged if they do not welcome him with open arms. There will always be a few who will refer their surgical cases, and he will be able to win their confidence and through them gain a foothold. His acceptance will be easier if he discards whatever self-conceit he might have. It need not be beneath his dignity to assist an outside surgeon called in to operate, nor to help the family doctor in the postoperative care of this patient, without fee and without malice. He will be exploited at times almost beyond endurance, but humility will be rewarded as the years pass.

The first year will be difficult, for he may treat only a few patients and he may be tempted to fill in his time with general practice. There is nothing to be said against general practice, but no doctor can become a master surgeon and at the same time carry the load of a general practitioner. His time may better be used to survey the over-all medical needs of the community as a basis for future improvement. Any trade center with a population of 20,000 can eventually support a 50 to 100 bed hospital and two doctors specializing in general surgery. Thus he will do the community a real service if he later brings in an associate. This will allow time for study at other medical centers and still keep a surgeon in attendance. Good men attract good men, and gradually the community hospital will become a medical center.

GEORGE A. COLLETT, M.D., Elko, Nev.

MEDICAL MOTION PICTURES

The Steps of Age: Emotions of Everyday Living Series 16 mm. black and white sound showing time 25 min. Produced in 1950 by Film Documents New York for the National Association for Mental Health Inc and the State of South Carolina. Procurable on purchase ($95) from International Film Bureau Inc. 6 North Michigan Ave Chicago 2 or on loan from state or local mental health authorities.

This film is about a woman of 62, at the critical point, when she is crossing into the last quarter of her life It shows her confusion and her first uneasy steps toward insight into herself and her problems Treated very dramatically are the painful emotional problems engendered by her husband's having to retire from his job and the frustrations of unemployment due to old age One of the most poignant scenes of the film deals with interpersonal relations among a grandmother, a mother, and a grandchild, where age differences contrive to turn love into hate

Except for a few sequences, the approach of this film is negative, problems are presented, but few solutions are suggested As such, it can be valuable when used with groups of young people to enable them to recognize and appreciate problems of which they may not be aware and as an introduction to a discussion of the positive means of solving these problems Although a competent discussant should be present whenever this film is shown, the need for a discussant of exceptional ability must be recognized when the film is to be used with older people It is highly recommended for social workers and graduate students of psychology and is also recommended for groups of young people and parent teacher groups if competent discussion leaders are present The photography, direction, and sound are excellent

Gelfoam in Surgery: 16 mm color sound showing time 25 min. Produced in 1949 for The Upjohn Company by Audio Productions Co New York. Procurable on loan from The Upjohn Company Kalamazoo Mich.

This motion picture reveals a few of the elementary points about the clotting mechanisms of the blood as related to the use of hemostatic agents and clearly describes, without any unjust claims, the methods for using gelfoam® (absorbable gelatin sponge) in the control of hemorrhage The process of its preparation is briefly described, and the picture demonstrates how it can be placed over the bleeding point as a small pack or patch to control hemorrhage and may be applied dry or moistened with saline Originally it was thought that thrombin might be necessary, but it soon became obvious that it is needed only in unusual cases, such as hematopoietic diseases Gelfoam® is absorbed by the tissues in about three weeks and produces a remarkably small amount of reaction as it is being absorbed The picture depicts its use on the bleeding surface after cholecystectomy, prostatectomy, hemorrhoidectomy, and removal of brain tumors The film recommends gelfoam® to fill in dead space, this use appears worthy of consideration Its best application seems to be in control of hemorrhage following removal of brain tumors Probably few surgeons will use it to control the bleeding following hemorrhoidectomy Its dramatic use to stop bleeding from a puncture wound of the heart is described, but no claims are made for its use in this type of injury This picture is recommended for a general surgical audience The photography and narration are excellent, and the film is well organized

Problems in the Treatment of Poliomyelitis 16 mm color sound showing time 40 min Prepared in 1950 for The Division of Physical Medicine by Audio Visual Education Service University of Minnesota with the aid of a teaching grant from The National Foundation for Infantile Paralysis. Procurable on loan from The Division of Physical Medicine University of Minnesota Medical School Minneapolis

This film shows, in a large series of patients, the effects of poliomyelitis on the various skeletal muscles of the body The portrayal of actual situations and the presentation of theoretical considerations are not allowed to get between the object and the observer at any time The involvement of individual muscles is well shown In the beginning of the film, there are excellent demonstrations of the spasm of various muscles, in the sense that normal degrees of extension are shown to be painful The extent of weakness and atrophy that can be produced is exhibited in the muscles of the legs, back, and arms, and in the diaphragm and other respiratory musculature An extraordinary view is that of a boy in whom the infrahyoid and suprahyoid musculature becomes active because of the paralysis of the sternocleidomastoid muscles

This motion picture would be of the highest educational value for anyone concerned with the detailed management of poliomyelitis It is perhaps too long and too detailed for the average general practitioner, but it should be invaluable to the orthopedist, the specialist in physical medicine, and the physical therapist who follows through with the specific and detailed reeducation of the patient in whom paralysis follows an acute attack of poliomyelitis The photography is good and the narration fair

Problems of Rheumatoid Arthritis 16 mm color sound, showing time 33 min Produced in 1950 for The Arthritis and Rheumatism Foundation by Medical Film Guild Ltd New York. Procurable on loan or purchase from The Arthritis and Rheumatism Foundation 535 Fifth Ave New York.

This film reviews the incidence of arthritis, its economic and social significance, the lack of facilities for care, and the small sums available for medical research The pathology, the clinical manifestations, and the treatment of rheumatoid arthritis are first presented, showing that arthritis therapy, long before cortisone and corticotrophin (ACTH) came along, had something to offer the patient, though largely nonspecific and preventive There then follows a sequence on hormone therapy

In general it is a good film There seems to have been some confusion from the standpoint of intended audience It is not technical enough for a medical audience and is too technical for lay groups It is not made clear why rheumatoid arthritis is singled out The problem of possible causation is dismissed much too early It is recommended as an introductory film for medical students, nurses, and technicians It might be of some value to lay audiences with some previous knowledge of this This film is not recommended for specialists The photography, animation, and narration are well done

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Medical Practice Acts· Use of Injunction to Restrain Practice of Medicine by Chiropractor.—The State Board of Medical Registration and Examination filed suit to enjoin the defendant from practicing medicine without a license From a judgment in favor of the defendant, the plaintiff appealed to the Supreme Court of Indiana

Section 63—1311 of the Indiana Statutes provides that 'to open an office for such purpose or to announce to the public in any way readiness to practice medicine in any county of the state, or to prescribe for, or to give surgical assistance to, or to heal, cure or relieve, or to attempt to heal, cure or relieve those suffering from injury or deformity, or disease of mind or body, or to advertise, or to announce to the public in any manner a readiness or ability to heal, cure or relieve those who may be suffering from injury or deformity, or disease of mind or body, shall be to engage in the practice of medicine within the meaning of this act It shall also be regarded as practicing medicine within the meaning of this act if any one shall use in connection with his or her name, the words or letters Dr, 'Doctor,' Professor, M.D or Healer, or any other title, word, letter, or designation intending to imply or designate him or her as a practitioner of medicine or surgery in any of its branches" The same section also provides that in charging any person in a complaint for injunction, with a violation of this law by practicing medicine, surgery or obstetrics without a license, it shall be sufficient to charge that he did, upon a certain day and in a certain county, engage in the practice of medicine, he not having any license to do so without averring any further or more particular facts concerning the same

The defendant maintained an office with a reception room and treatment room in which there was an examination table, chairs, and the usual furniture found in the office of a professional man Outside of the premises there was a sign with the lettering R W Henry Chiropractor " The defendant had no license to practice chiropractic. On August 23, 1948, one of the dates charged in the complaint, a witness called at the office of the defendant for treatment, informed the defendant that he was suffering from headache and pains through his shoulder, and asked the defendant whether he could relieve him of these pains The witness removed his shirt, at the defendant's request, and defendant ran his hands up and down his back and across his shoulders, explaining that the bone structure of a person's back and spine was such an intricate mechanism that he would not want to furnish any treatment until such time as x-rays proved there was cause for treatment, or the nature of the treatment needed When he left the defendant's office, the witness took with him a pamphlet extolling the benefits of chiropractic treatment, at the bottom of page one of which was printed the words "R. W Henry, D C," and at the bottom of the last page of which was the following 'R W Henry, D C., Scientific Chiropractic, NCM and X-ray, Phone 4941, 1218 Kossuth Street, Lafayette, Indiana "

The clerk of the county court testified that he had the custody and care of the records relating to the issuance of licenses to practice medicine in any of its forms in the county, and that the defendant did not have either a drugless physician's or regular physician's license

The only evidence produced by the defendant was a deposition of the secretary of the state board of medical registration and examination which stated, among other things, that a chiropractor can receive a license to practice in Indiana if he meets the same requirements as medical men, that there is no examination held exclusively for graduates of chiropractic colleges, whether such college is on the approved list or not, that an applicant would be admitted if he met the same requirements as would be required of a doctor of medicine, that a man, to take the examination, must be a graduate of an approved college, that as far as he knew there are no graduates of chiropractic colleges who have been permitted to take an examination conducted by the medical board since 1927, that the medical board is a composite board organized for the purpose of taking care of all systems of medicine

The plaintiff contended that the undisputed and sole and only evidence introduced, revealed that the defendant was practicing medicine without a license and that the trial court abused its discretion in denying the plaintiff's request for an injunction If the evidence is undisputed and uncontradicted that the defendant was practicing medicine without a license, said the Supreme Court, the trial court has no discretion but, as a matter of law, should grant a temporary injunction Here the evidence showed that the defendant was practicing medicine within the meaning of the term as defined by the Indiana statutes

The defendant contended, however, that since this was a case in equity, the State of Indiana was required to do equity, that the testimony of the secretary of the medical board showed that the board was administering the law in a discriminatory manner, and that therefore the state did not come into court with clean hands and was not entitled to injunctive relief The Supreme Court pointed out, however, that the defendant failed to show that he himself had been injured, prejudiced or harmed by any action of the medical board To avail the defendant, wrongful conduct on the part of the board must be proved to have affected the defendant himself The defendant did not show that he had ever applied for examination or that the plaintiff had applied to him standards different from those fixed by the law and the duly adopted rules and regulations of the board The Supreme Court therefore concluded that the evidence of the defendant was not sufficient to show that the plaintiff was not doing equity and did not come into court with clean hands

Accordingly the Supreme Court found that the evidence was undisputed and uncontradicted that the defendant was practicing medicine without a license and that the trial court had no discretion but, as a matter of law, should have granted the temporary injunction The judgment in favor of the defendant was reversed with instructions to grant the temporary injunction requested —*State ex rel Board of Medical Registration & Examination v Henry, 97 N E (2d) 487 (Indiana 1951)*

Libel Calling Chiropractic Advertising a Misrepresentation.—The plaintiff, Committee for Chiropractic Education Inc., a nonprofit corporation, filed suit against the State Medical Association of Texas and others for damages for publication of an alleged libel From a judgment in favor of the plaintiff, the defendants appealed to the court of appeals of Texas

The plaintiff is a nonprofit organization incorporated under the laws of the State of Texas for the purpose of maintaining a nonprofit educational foundation In February, 1949, this organization caused to be published and circulated in Harris County and other counties in the State of Texas, eight pages of advertisements concerning the chiropractic profession Some time later the State Medical Association of Texas, the Harris County Medical Society and the Travis County Medical Society joined in a statement which was published in a Houston, Texas, newspaper, which stated that the publication by the plaintiff in February "was a paid 'special edition' packed with misrepresentations However, it was written to look like a real news section so that its misrepresentations might appear to be legitimate " The plaintiff alleged that it and the chiropractic profession in general had suffered great injury and damage from the publication and circulation of the defendants' statement and it sought recovery of actual and exemplary damages

The defendant filed a plea of privilege and contended (1) that the plaintiff failed to make out a prima facie case of libel against it since the language charged as defamatory was in no sense libelous per se and (2) that the plaintiff's petition contained no specific charge of defamation, but merely charged that the defendant's statement alleged that the plaintiff's advertisement was "packed with misrepresentations '

In Roget's Thesaurus of English Words & Phrases, the word "misrepresentation" is classified as a "falsehood " The word "falsehood" is therein classified as being a misrepresentation, an untruth, and as perjury, false swearing and fabrication In Black's Law Dictionary, 'misrepresentation" is defined as an untrue statement of fact, an incorrect or false representation which, if accepted, leads the mind to an apprehension of a condition other and different from that which exists Webster s New International Dictionary defines "misrepresentation" as improper or unfaithful representation, and as false or incorrect statements, and as misrepresentations of a person s motives

The courts of this state, said the court of appeal, have recognized that a misrepresentation is a falsehood or untruth with the intent and purpose of deceit Whether the published statement complained of was a defamation and whether the statement was libelous per se are the controlling questions It has been uniformly held that to impugn the veracity of a person is to defame him It is also the established rule in this state that written or printed words which charge dishonesty or fraud, or rascality and general depravity are generally libelous per se Article 5430 of the Texas statutes which defines libel, reads that "a libel is a defamation expressed in printing or writing tending to injure the reputation of one who is alive, and thereby expose him to public hatred, contempt or ridicule, or financial injury, or to impeach the honesty, integrity, or virtue, or reputation of any one " We think it clear, said the Supreme Court of Texas in a prior case, that the enactment of the law, the purpose was not only to make definite what constitutes actionable libel in this state, but to materially modify the doctrine of the common law upon that subject By the terms of the present law, a libelous publication, contrary to the common law rule, becomes actionable without the proof of malice, whether it is or not libelous per se. Under the present law the Supreme Court of Texas has held that it is not necessary to the right to maintain an action for a publication not libelous per se to allege or prove special damages In this case, said the court of appeal, the trial court in effect found that the defendant's language was defamatory and libelous per se Therefore the plaintiff was not required to prove special damages The judgment overruling the defendants' plea of privilege was therefore affirmed —*State Medical Association of Texas v Committee for Chiropractic Education, 236 S W (2d) 632 (Texas 1951)*

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A M A Arch Internal Medicine, Chicago

87 775-900 (June) 1951

*Intravenous Use of Salt Poor Human Albumin Effects in 34 Patients with Decompensated Hepatic Cirrhosis J Post J V Rose and S M Shore —p 775
Effects of Veriloid® on Essential Hypertension New Derivative of Veratrum Viride A L. Gropper A Surtshin and J T Hedrick. —p 789
Acute Benign Pericarditis O F Rosenow and C J Cross —p 795
*Benign Essential (Heredofamilial) Tremor C H Davis Jr and E C Kunkle —p 808
Determination of Serum Protein Bound Iodine as Routine Clinical Procedure B L. Hallman P K Bondy and M A Hagewood —p 817
Familial Leptocytosis (Cooley s Anemia and Cooley s Trait) Observations on Three Families with Related Study of Bone Marrow Activity H E Hamilton and W M Fowler —p 825
*Terramycin in Treatment of Human Brucellosis. V Knight, F R Sancnez and A R Sanchez.—p 835
Liver Cirrhosis Relation Between Function and Structure Based on Biopsy Studies S S Waldstein H Popper P B Szanto and F Steigmann —p 844

Intravenously Administered Albumin in Cirrhosis.—Salt-poor human albumin was given intravenously to 34 patients critically ill with decompensated hepatic cirrhosis The initial dose of 100 cc of 25% solution twice daily was adjusted in each patient, so that a serum albumin level of 4 0 to 5 0 gm was maintained Treatment was continued for many weeks, the minimum effective total dose being about 625 gm Diuresis, with clearing of ascites and edema, occurred in 21 patients This was accompanied by an increase in appetite, weight, and strength and by a feeling of well being In most patients there was a decrease in jaundice Of the 34 patients, 16 were in hepatic coma or semicoma when treatment was begun Nine of these recovered, and eight had diuresis The increased plasma volume and venous pressure associated with albumin therapy did not result in an increased incidence of bleeding from esophageal varices, but the authors warn that the patient's circulatory status must be carefully evaluated before albumin is given They feel that salt poor human albumin is a useful adjunct in the management of severely decompensated cirrhosis when adequate dietary therapy cannot be provided

Benign Essential (Heredofamilial) Tremor—This is a report of 14 cases of essential tremor encountered in a general hospital over 10 yr From this series and from previous reports, the authors summarize the clinical features of this little known but common hereditary disorder The disease, which may begin at any period from infancy to old age, is characterized by a rhythmical tremor involving principally the hands, forearms neck, head, and face The tremor is generally decreased or absent at rest and present on voluntary increase in muscle tonus It is aggravated by emotion, fatigue, cold, caffeine, and nicotine Except for the increased terminal intention tremor, which may interfere with self-feeding and writing accuracy and coordination are little involved There are no defects in reflexes or in sensation The tremor may progress for several years, remain stationary, and then progress rapidly again in old age In most cases the disorder can be traced through several generations, frequently as a dominant characteristic Both males and females are affected, and either sex may transmit the disease The proper treatment of essential tremor is explanation and reassurance that the condition will not be disabling Scopolamine hydrobromide and trihexyphenidyl have no significant therapeutic effect. Phenobarbital gives some symptomatic benefit, as does alcohol The disease can be differentiated from Parkinsonism or progressive lenticular degeneration by the absence of rigidity, the preservation of automatic associated movements and rapid rhythmical alternating movements, the benign course, and the family history It must be distinguished from tremors due to hyperthyroidism, cerebellar disease, dementia paralytica, and emotional tension The underlying pathological lesion is not known

Terramycin in Brucellosis.—Terramycin proved to be highly effective in the treatment of the acute manifestations of brucellosis in 11 patients, nine of whom were bacteremic A 12th patient, with severe spondylitis as a complication of brucellosis, *did not respond The drug was given* in a dose of 100 mg per kilogram of body weight every six hours, or 150 mg per kilogram every three hours, until defervescence, when the dose was reduced to 50 mg per kilogram per day Therapy was continued for 28 days Striking relief of symptoms was noted within a few hours after the start of therapy, but bacteremia persisted for several days in some patients Clinical and bacteriologic relapse occurred in two patients within three months Both were successfully retreated with terramycin All strains of Brucella tested were more sensitive in vitro to terramycin than to aureomycin or chloramphenicol, and therapeutic results were as good with terramycin as with the other two antibiotics Results were far superior to those obtained with streptomycin and sulfadiazine Animal experiments indicate that streptomycin enhances the effectiveness of terramycin against Brucella This combination might reduce the rate of relapse Further experiments demonstrated that smaller doses of terramycin (25 mg per kilogram of body weight) also proved effective in the therapy of acute brucellosis

A M A Arch Ophthalmology, Chicago

45 615-728 (June) 1951

Relation of Diplopia to Binocular Vision in Concomitant Strabismus A Posner and A Schlossman —p 615
*Ocular Complications Encountered in Intracranial Arteriography H F Falls, R C. Bassett and A. E. Lamberts —p 623
Ophthalmoscopic Findings in Normal Premature Infants G S Tyner —p 627
Some Contemporary Concepts of Scleral Disease K C Swan —p 630
Cause of Failure in Retinal Detachment Surgery P R McDonald —p 645
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Aureomycin in Treatment of Trachoma. R. Ching —p 657
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New Plastic Surgical Drapes T S Gerspacher H D Fowler Jr and D E Rolf —p 673
Occlusion of Central Retinal Vein in Migraine. M W Friedman —p 678
Optic Atrophy Uveitis and Intracranial Disease F H Adler —p 683
Optics and Visual Physiology Review of Literature for 1949 and 1950 K. N Ogle —p 684
Measurement of Visual Acuity Critical Review L. L. Sloan —p 704

Ocular Complications in Intracranial Arteriography—The frequency and type of ocular complications occurring after intracranial arteriography was investigated by the authors A total of 80 consecutive patients undergoing this intervention were given an ophthalmologic examination before and after the angiographic examination A table listing the petechial hemorrhages observed shows that 35 patients had cutaneous, 65 conjunctival and 20 retinal petechial hemorrhages More than half the patients had petechiae in two or three of these locations Pupillary dilatation, optic neuritis angiospasm of retinal vessels, and blindness were also observed The cause of these complications is not known, but they undoubtedly result from vascular changes secondary to allergic, toxic, or physical phenomena

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An asterisk (*) before a title indicates that the article is abstracted

A.M A Arch Pathology, Chicago

51 567-670 (June) 1951

Morphology of Sporotrichum Schenckii and Histoplasma Capsulatum in Tissue A M Kligman and G D Baldridge —p 567
Hypertensive Cardiovascular Disease Vascular Lesions of Dogs Maintained for Extended Periods Following Bilateral Nephrectomy or Ureteral Ligation E E Muirhead L B Turner and A Grollman —p 575
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Attempts to Produce Rheumatic Carditis in Laboratory Animals by Means of Streptococcic Injury J J Robinson —p 602
Experimental Cholesterol Arteriosclerosis III Reaction of White Blood Cells R Altschul and M E Martin —p 617
•Botulism Complication of Clostridium Botulinum Wound Infection C G Thomas Jr M F Keleher and A P McKee —p 623
Localization of Nephrotoxic Antigen Within Isolated Renal Glomerulus C A Krakower and S A Greenspon —p 629

Clostridium Botulinum Infection of a Wound —Although a few cases have been reported in which Clostridium botulinum was isolated from traumatic wounds, in none of these were symptoms of botulism present. This paper reports the case of a boy, 13, who died of botulism following contamination with Cl botulinum of a relatively minor gunshot wound of the thigh He had rapidly progressive generalized muscular weakness and great prostration, associated with dysphagia, dysphonia, and inability to cough Death, which occurred nine days after the injury, was due to respiratory failure and bilateral lobular pneumonia It would seem that botulism from this source might occur more frequently, since the organism is ubiquitous in nature, a potential contaminant of every traumatic wound Furthermore, its growth requirements for initiating an infection appear to be almost identical with those of Cl tetani Finally, botulism has been produced in experimental animals by the injection of heated spores, and investigators have demonstrated that the botulinus toxin may be absorbed from broken skin and fresh wounds The observations in this case were consistent with the findings in botulism, except for severe cerebral edema, which has not been previously reported, but which may actually have been a consequence of respiratory failure and cerebral hypoxia

American J Digestive Diseases, Fort Wayne, Ind

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Responses of Guinea Pig's Ileum to Histamine Acetylcholine Antigen and Electrical Stimulation as Influenced by Progressive Decreases in Concentrations of Calcium Magnesium or Potassium Separately or in Pairs B N Craver and W E Barrett.—p 163
•Fatal Gastric Hemorrhage Following Aureomycin W P Kleitsch —p 166
Bowel Perforation Due to Ingested Foreign Bodies. W P Kleitsch and G S Sinow —p 167

Fatal Gastric Hemorrhage Following Aureomycin —Kleitsch reports the case of a man who was given aureomycin in 250 mg doses every four hours when a recurrent bronchopleural fistula failed to respond to penicillin therapy Aureomycin was discontinued after 20 days of consecutive administration Several days later the patient had a severe gastric hemorrhage which was followed by death Necropsy revealed that it was caused by hemorrhage from a large ulcer 3 cm in diameter in the pyloric antrum immediately adjacent to the duodenum Before aureomycin therapy there had been roentgenographic evidence of a small ulcer in this region It is not possible to state unequivocally that the fatal hemorrhage in this case was due to aureomycin therapy This patient's poor general condition contributed to his rapid death Loss of appetite and a diminished intake of food probably favored extension of his peptic ulcer However, one may be justified in assuming that aureomycin played at least a contributory role Aureomycin in solution has an acid reaction and it seems likely that the continuous administration of such an acid solution to a patient with a peptic ulcer might aggravate the ulceration

American Journal of Medicine, New York

10 671-792 (June) 1951

•Prophylaxis of Acute Rheumatic Fever by Treatment of Preceding Streptococcal Infection with Various Amounts of Depot Penicillin L W Wannamaker C H Rammelkamp Jr F W Denny and others —p 673
•Chloramphenicol in Treatment of Meningococcal Meningitis. F R McCrumb H E Hall A M Merideth and others.—p 696
Evaluation of Hemagglutination Test for Tuberculosis J W Fleming E H Runyon and M M Cummings —p 704
Behavior of Myocardium in Health and Disease as Studied by Coronary Sinus Catheterization R J Bing and R Daley —p 711
Influence of Chronic Pulmonary Disease on Heart and Circulation R M Harvey M I Ferrer D W Richards Jr and A Cournand —p 719

Prophylaxis of Acute Rheumatic Fever —Procaine penicillin G in oil containing 2% aluminum monostearate was injected intramuscularly according to one of three dosage schedules in 1,178 patients with exudative tonsillitis or pharyngitis in an attempt to prevent the development of acute rheumatic fever in these patients while 1,162 patients were untreated and served as controls Of the 1,178 patients, 634 were given a total dose of 1,200,000 units of penicillin in three injections over a period of 96 hr, 254 were given 600,000 units in two injections over 72 hr, and 290 were given a single injection of 600,000 units. In 10 patients who had received penicillin and in 42 patients who received no treatment rheumatic fever or possible rheumatic fever developed following the observed illness Data collected on the rheumatic patients in both the treated and untreated groups showed that when the time interval between the onset of exudative tonsillitis or pharyngitis and the onset of rheumatic fever was prolonged, there was bacteriologic or serologic evidence, or evidence from the history, of an intervening untreated streptococcic infection in many instances This is in contrast to the almost complete lack of such evidence of a second infection in cases in which the interval was short If one excludes those cases of rheumatic fever developing after a 45 day interval between the two diseases, there were two cases of rheumatic fever in the treated group and 28 in the control patients These data indicate that penicillin treatment of acute streptococcic infections almost completely prevents the subsequent occurrence of acute rheumatic fever Penicillin treatment was also observed to eradicate the streptococci from the oropharynx of the majority of persons and to inhibit the formation of antistreptolysin The most pronounced inhibition of antibody was that obtained by the dosage schedule of three injections of penicillin over a 96 hr period totaling 1,200,000 units of the antibiotic.

Chloramphenicol in Meningitis —Preliminary tests for in vitro sensitivity of six strains of Neisseria intracellularis to chloramphenicol (chloromycetin®) confirmed the observation made by others that chloramphenicol is significantly active against N intracellularis Animal experiments showed that a high level of protection is afforded by chloramphenicol in mice infected with N intracellularis Fifteen patients, 12 children and three adults, with meningococcic meningitis were treated with chloramphenicol Children received approximately 0 25 gm orally at four hour intervals (1 5 gm daily) and adults 1 gm every eight hours (3 gm daily) after a large initial dose based on 50 mg per kilogram of body weight In five instances chloramphenicol was administered intravenously in the early stages of treatment to achieve a high concentration of antibiotic in the blood and cerebrospinal fluid The total amount of chloramphenicol administered to the 15 patients varied from 5 5 to 30 gm, given over a mean period of 5 6 days In no instance was treatment continued longer than nine and a half days Adequate concentrations were observed in the blood and spinal fluid in patients receiving the drug either intravenously or orally Specimens of spinal fluid initially positive for meningococci in all patients became sterile within 36 hr after the institution of specific therapy During the first 48 hr of therapy an elevation rather than a depression of the spinal fluid white cell count occurred in most of the patients, but meningococci were usually absent as determined by culture Clearing of the spinal fluid occurred with surprising rapidity Temperatures were restored to normal on an average of three and a half days In six instances during the convalescent period, sporadic elevations of temperature were noted but were not indicative of relapse There was remarkable improvement in the appearance of the patients within the first 24 hr of treatment After the third day convalescence proceeded uneventfully One patient with fulminant meningococcemia and meningitis responded very favorably to chloramphenicol The results in these 15 patients indicate that chloramphenicol is an effective weapon against meningococcic meningitis There were no fatalities, nor were there residual signs of meningitis, except in one patient, who showed ophthalmoplegia before antibiotic treatment was instituted This eventually cleared

American J Obstetrics and Gynecology, St Louis

61 953-1192 (May) 1951 **Partial Index**

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Use of Blood Serum in Male Frog Test for Pregnancy A L. Haskins and A I Sherman —p 1150
*Study of 475 Pregnancies in American Indian Women C S McCammon. —p 1159

***Hyaline-Like Pulmonary Membrane in Premature Neonatal* Mortality.**—A pulmonary hyaline membrane is found at autopsy in a significant number of premature babies This hyaline like membrane has been described under such terms as asphyxial membrane, aspiration pneumonia, hyaline membrane, congenital pneumonia, vernix membrane, desquamative anaerosis, eosinophilic membrane, fibrinoid exudate or necrosis, and congenital alveolar dysplasia This study is based on necropsies performed on 439 infants who died neonatally and 264 stillborn infants, making a total of 703, among which were found 114 cases with hyaline like pulmonary membrane (16 4%) The highest incidence occurred in the birth weight category of 1 000 to 1,500 gm Maternal and infant histories, which were available for only 62 of the 114 infants with this membrane, are analyzed, and experiments on animals are described The authors think that the membrane is probably not related to the aspiration of the contents of the amniotic sac Prematurity was the only apparent predisposing factor to formation of the membrane in the lungs of these infants who died in the neonatal period When there is a triad of (*a*) a clinical history of an uncomplicated premature birth, (*b*) progressive respiratory embarrassment with death in one to five days, and (*c*) the presence of the hyaline like membrane as the only significant autopsy finding, the case can be recognized as hyaline-like membrane disease Injury from intrauterine anoxia and extrauterine therapy with high concentration of oxygen (over 60%) may be involved in the formation of the membrane in premature infants Further clinical and laboratory studies are necessary to determine the effects of oxygen concentration, barometric pressure, and humidity on respiration of premature infants

Pregnancy in American Indian Women.—Observations were made on 475 pregnant American Indian women who were delivered at the Navaho Medical Center over the 26 month period ending in August, 1950 These women came to the hospital by choice Nausea and vomiting related to pregnancy occurred in only 14% of these women Only 30 patients gave histories of previous miscarriage A total of 57 cases of threatened, incomplete, and completed abortions were seen during this study There were two women with eclampsia and 23 with severe pre eclampsia There were no maternal deaths, but there were three neonatal deaths Of the systemic diseases complicating pregnancy, syphilis was the most prevalent, with an incidence of 6 9% However, there were only two fetal deaths attributed to untreated maternal syphilis Cesarean section was thought to be indicated in only eight patients High forceps and extraction were never used The average age for the 100 primiparas was 20 5 years There were six women 16 years old or younger, the youngest being 13 There were four primiparas 30 years old or older, the oldest being 32 Of the 475 women, 33 were 40 or older, and 75 had had eight or more pregnancies One group of women had no fear of labor, the other group feared labor and needed analgesia and anesthesia Almost all of the first group were unable to speak English and had had little contact with the white race and its customs Only eight cases of uterine carcinoma were diagnosed among 6,685 hospital admissions during the period of this study possibly because of unusual vaginal cleanliness in these women Congenital anomalies occurred in eight infants

American Journal of Ophthalmology, Chicago

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Aureomycin Chloromycetin and Terramycin in Experimental Herpes-Simplex Virus Infections. H. O Geller and P Thygeson.—p 165
Separation of Pars Ciliaris Retinae in Retrolental Fibroplasia. J M. Dixon and E. V Paul —p 182

Visual Illusions In Flying—Unusual aircraft accidents led to experiments on visual illusions that affect pilots in operating aircraft at night or under adverse conditions of visibility and weather A survey of aviators indicated that such illusions were relatively frequent Experiments revealed that flying hazards are increased by illusions to which all pilots are susceptible Autokinetic illusions can occur in night flying but can be controlled if the number of formation lights on the planes is increased and if pilots are instructed to shift their gaze Experiments in a Bárány chair, a rotating Link trainer, and the human centrifuge indicated that acceleration and deceleration forces produce illusions of motion and displacement of visual targets and illusions of changes in bodily position Repeated experiments, both in the laboratory and in flight, show that the illusions persist, and that the subjects do not become adapted to the illusory effects A pilot, when flying at night or in a fog, cannot tell whether he is in a climbing turn or in a diving turn Pilots must rely on instruments and must learn to ignore their bodily sensations, no matter how overpowering they may be Much of the fear and mystery involved in spatial disorientation are removed when pilots understand the cause of these illusions and how to counteract them

American Journal of Pathology, Ann Arbor, Mich

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Localized Tuberculoid Granulomas Associated with Carcinoma Their Relationship to Sarcoidosis W St. Symmers.—p 493
Malignant Melanoma in the Tropics W F Enos and R H Holmes —p 523

Pneumonia After Antibacterial Therapy —Since the introduction of sulfonamides and antibiotics into the therapeutic management of pneumonia, death from bacterial infections of the respiratory tract now rarely occurs in adults, and in children fatalities have been greatly reduced With penicillin therapy, the temperature usually fell to normal within 24 hr and improvement in the clinical condition was noted Hospitalization ranged from two to five days Fatal cases were limited generally to infants 2 or 3 weeks old or to children with some additional disease In the past 10 yr Menten and McCloskey examined lungs from approximately 250 children who died from pneumonia and from about 450 other children who died from different causes but who also had complicating terminal pneumonia Lungs of children dying with pneumonia after receiving adequate antibiotic treatment contained few or no bacteria These abacterial lungs showed extensive cellular hyperplasia of the alveolar walls and few or no neutrophilic leukocytes The bronchi and bronchioles were free from involvement and appeared normal Whether the tissue changes were caused by residual toxins of bacteria removed from the field by sulfonamides and antibiotics or were due to an unidentified virus remains unanswered

Am J Syphilis, Gonorrhea and Ven Dis , St Louis

35 201-300 (May) 1951

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Chloramphenicol in Syphilis.—This study concerns a clinical and serologic evaluation of syphilitic patients treated with varying dosages of chloramphenicol The daily dose was divided into six portions and administered orally every four hours The dosages were established on the basis of weight groups rather than the exact weight of each patient Seventy nine patients with primary and secondary syphilis were treated with 30 and 60 mg per kilogram of body weight daily for four to eight days The initial results in clinical healing of primary and secondary lesions were as favorable as with penicillin treatment The highest percentage of seronegativity was achieved by patients treated with 60 mg per kilogram daily for eight days Dryness of the mouth and mild diarrhea occurred only occasionally Several patients had mild Jarisch-Herxheimer reactions manifested by 1 to 2 degrees (F) elevation of temperature Red granular glossitis and pharyngitis developed in five patients, but the tongue and pharynx rapidly returned to normal following the administration of vitamin B complex The serologic progress of all except one of the 11 patients with early latent syphilis was favorable but within the short period of the follow-up, none attained seronegativity Ulcerative lesions healed in all three patients with late syphilis who were treated with 60 mg per kilogram daily for 15 days The cerebrospinal fluid cell counts of a patient with paresis and of two with acute meningovascular syphilis returned to normal after 15 days treatment No improvement was noted in a patient with optic atrophy and a patient with tabes dorsalis As regards the possible masking effect on a syphilitic infection when small doses of chloramphenicol are used to treat gonorrhea, the authors believe that the same post-treatment observation for the possible development of concomitantly acquired syphilis should be observed as has been advised following penicillin treatment, i e, from four to six months Chloramphenicol appears to be an effective oral antisyphilitic agent In the treatment of neurosyphilis this antibiotic should be given for at least 15 days

One Injection Schedule for Early Syphilis.—Procaine penicillin G, by providing adequate, sustained penicillin blood levels, led to the investigation of the single dose schedule in the treatment of syphilis Seventy-one patients with dark-field positive syphilis were treated In 36 patients a diagnosis of secondary syphilis was made, 21 patients were seropositive primary, and 14 were seronegative primary To each of the 71 patients 2,400,000 units of crystalline procaine penicillin G in peanut oil with 2% aluminum monostearate was given intramuscularly in injections of 600,000 units at each of four sites simultaneously At the end of a follow up period of six or seven months, 70% of the patients were clinically and serologically negative No serious reactions were observed Effective blood levels were maintained for all the patients for 96 hr following the one injection schedule Preliminary results of this study indicate that a one injection schedule is effective in the treatment of early syphilis however longer periods of observation are necessary for final evaluation

American Journal of Tropical Medicine, Baltimore

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External Endometriosis.—Te Linde and Scott limit their discussion to external endometriosis, pointing out that internal endometriosis or adenomyosis is a separate clinical entity External endometriosis is increasing, and it occurs oftenest in women in the childbearing age The authors review their observations on 243 women in whom they performed operations primarily for endometriosis Pain in the lower abdomen and especially dysmenorrhea are the most characteristic symptoms There is, however, no typical history of endometriosis, and the authors feel that laparotomy on the basis of the history alone is not justifiable If surgical treatment is used in young women it should be conservative, so that the woman will still be able to bear children The evidence concerning the value of hormones is still inadequate The authors use hormones only for patients who refuse surgical treatment Because testosterone has been known to cause hirsutism, they prefer diethylstilbestrol, but this hormone has been known to produce severe uterine hemorrhage Various theories have been advanced with regard to the etiology of endometriosis The authors feel that their experiments on the creation of endometriosis in the monkey indicate that cast-off menstrual endometrium is capable of growth This fact greatly strengthens Sampson s theory of retrograde menstruation

Annals of Internal Medicine, Lancaster, Pa

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*Lipedema of Legs Syndrome Characterized by Fat Legs and Edema L E. Wold E A *Hines* Jr and E. V Allen —p 1243

Treatment of Angina Pectoris with Propylthiouracil —Thyroidectomy has been largely abandoned as a treatment for angina pectoris, but the antithyroid drugs have been employed by some investigators This paper reports on seven patients treated with propylthiouracil who had had angina pectoris for over a year but no recent attacks of myocardial infarction or congestive failure Coronary arteriosclerosis was the only apparent cause of angina pectoris Relief of pain was significant in three of the seven patients, transient in one, slight in one, and absent in two When benefit occurred, it usually appeared about two months after the beginning of treatment with propylthiouracil Mild to moderate myxedema was produced in all cases No toxic reactions were encountered, even with large doses (800 to 3 000 mg daily) for many months Improvement may be related to a decline of the circulating thyroid hormone rather than to general metabolic depression The results seem sufficiently favorable for this therapy to be considered in cases in which the usual medical measures fail to restore a reasonable degree of painless activity Before the therapy is abandoned as ineffective, dosage should be adjusted and treatment continued until myxedema becomes evident

Treatment of Pneumonia with Bacitracin.—Bacitracin is an antibiotic produced by the Tracy I strain of Bacillus subtilis Its bactericidal spectrum is comparable to that of penicillin in local as well as systemic application, and it is sometimes effective when other treatments fail Reisner and associates tried bacitracin in lobar pneumonia because pneumococci are highly sensitive to bacitracin, and because pneumonia runs a sufficiently consistent course to permit the evaluation of a new therapy Bacitracin in doses of 15,000 units every six hours intramuscularly cured early cases of pneumonia without bacteremia, but such doses were inadequate to clear the blood of infection Of eight patients treated with the small doses, five recovered and three had to be changed to penicillin therapy to effect cure In a later study 14 patients with lobar pneumonia were treated with bacitracin in doses of 30,000 to 99,000 units intramuscularly every six hours Twelve of these 14 patients recovered, one had to be changed to penicillin therapy, and one died of bacterial endocarditis, although his pneumonia responded well to treatment The authors feel that bacitracin is an effective agent in the treatment of pneumococcic pneumonia All patients had moderate albuminuria, casts, and impairment of concentrative power of the kidney and of phenolsulfonphthalein excretion, lasting for a variable time after therapy This nephrotoxicity of bacitracin necessitates caution but does not contraindicate its use in suitable cases

Lipedema of Legs —Wold and associates present observations on 119 cases of lipedema, which were examined at the Mayo Clinic from 1937 through 1946 The term lipedema was coined by two of the authors to describe large legs due to the subcutaneous deposition of fat in the buttocks and lower extremities and the accumulation of fluid in the legs Characteristically, there is symmetrical bilateral enlargement of the buttocks and lower extremities, which begins almost imperceptibly and progresses gradually Progressive enlargement of the limbs is ordinarily associated with gain of weight, but evidence of obesity of the trunk upper extremities, face, and neck may be entirely absent The enlargement of the limbs is accentuated by orthostatic activity, particularly in warm weather, and, although rest in bed may cause some decrease in size of the limbs, owing to removal of fluid, even prolonged bed rest will not reduce the limbs to normal size The authors stress that this condition differs from lymphedema in that women are almost exclusively affected that both limbs are symmetrically involved, that the swelling is usually soft and that pitting is minimal, that there is usually a family history of large legs, and that episodes of inflammation, such as are commonly observed in lymphedema, are usually absent Each of the 119 patients observed at the Mayo Clinic was examined by one of the consultants in the section on peripheral vascular disease, since the disease is often confused with chronic venous insufficiency and lymphedema All but one of the patients were women Most of the patients were overweight, a preponderance of the excess fat being in the lower half of the body In most instances this represented an exaggeration of the normal female configuration Discomfort in the legs, consisting of diffuse pain tenderness and aching distress, was a prominent symptom in about one half of the group Chronic induration cellulitis and stasis lesions did not occur unless there was an associated, coincidental chronic venous insufficiency The basal metabolic rate was usually less than 0%, but none of the group had clinical evidence of myxedema. Anxiety concerning the appearance of the lower extremities and possible serious significance of the edema was usual

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Electrocardiographic Changes During Emotion.—A group of 35 patients, including 18 men and 17 women about half of whom were over 45 years of age, were subjected to electrocardiographic tests The majority had complaints referable to the cardiovascular system, some originating in structural heart disease others in purely functional disturbances Electrocardiographic electrodes were attached to the patient, who lay on a bed while he was interviewed The physician who was familiar with the patient s history, directed the conversation from time to time to topics known to be disturbing to the patient and which were relevant to his illness At other times the patient was asked to relax or was diverted by pleasant conversation Electrocardiograms were taken at frequent intervals during the interview Notes were made of the patient's behavior, movements, voice, and remarks, as an aid to the assessment of his emotional state In order to compare the electrocardiographic changes coincident to the stress of life situations with those resulting from another type of stress the electrocardiograms after exercise were studied in 19 of the patients In five of these 19, the rate after exercise did not reach that during anxiety in the interview In one of these the heart rate during emotional disturbance was 112 and immediately after exercise (the equivalent of walking briskly up four flights of stairs) did not exceed 95 In 14 patients the rate immediately after exercise was comparable to that attained during the emotional disturbance, so that the electrocardiographic complexes could be compared at similar heart rates In eight of these the electrocardiogram was identical following exercise and during the disturbed emotional state In four others the changes were in a similar direction but less in degree after exercise than during anxiety or resentment In the remaining two the changes after exercise and during anxiety were in a different direction

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International Journal of Leprosy, New Orleans

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Streptomycin in Leprosy—Observations on 114 patients with leprosy revealed that in doses as low as 0 5 gm daily, streptomycin and dihydrostreptomycin favorably influence the specific cutaneous and mucous membrane lesions The symptoms associated with acute or recurrent iridocylitis can often be controlled with these antibiotics, but they exert little, if any, beneficial effect on such complications as acute lymphadenitis, orchitis neuritis, or the associated edema of the mucous membranes or skin The appearance of toxic manifestations, vertigo, tinnitus, and loss of hearing usually precludes the continuous administration of streptomycin or dihydrostreptomycin beyond a period of six months, and rarely will a patient tolerate them for more than a year Although there is much clinical improvement at the end of such periods of treatment, the concentration of bacilli in the remaining skin lesions remains unaltered However, reduction in size of lepromas must represent a reduction in the absolute number of bacilli in the tissue The results obtained with these antibiotics resemble those obtained with the sulfones, but these can be administered indefinitely, and with them a reduction of bacilli in nodular lepromatous lesions can be demonstrated after two or three years of treatment The early response of mucous membrane lesions to the antibiotics is undoubtedly due to the elimination of secondary invaders, growing in and upon leprous lesions of the nasal, pharyngeal, and laryngeal mucous membranes However, the healing of the leprous ulcerations indicates that the antibiotics also influence these lesions themselves Unless less toxic products are found, or unless the dosage can be further reduced without impairing the therapeutic activity, streptomycin and dihydrostreptomycin can be used only as adjuvants to sulfone therapy They can be used (1) in combination with the sulfones to hasten resolution of specific leprous skin and mucous membrane lesions at the beginning of treatment, (2) to effect further clearing of residual leprous skin lesions that have reached a stationary stage with sulfone treatment, (3) to relieve annoying symptoms of sulfone resistant mucous membrane lesions and to heal such lesions, (4) to abort attacks of acute leprous iridocylitis, and (5) for treatment of patients who have an idiosyncrasy to the sulfones

Lepromatous Eruption During Diethylstilbestrol Therapy.—In a man, 84, a widespread lepromatous eruption on the limbs and erythema of the chest developed in the course of a few days There were no other signs of leprosy, and he had no constitutional symptoms Thirteen months before the skin eruption appeared, prostatic carcinoma had been diagnosed clinically, oral treatment with diethylstilbestrol (α,α'-diethyl-4,4 -stilbene diol) was started at that time and was continued until the skin lesions appeared Even when the prostate was first examined rectally, it was felt that the findings on palpation were not so characteristic of carcinoma as to exclude a purely inflammatory condition As there were no grounds for surgical intervention, and as, in view of the patient's age, biopsy was not considered essential, no histological examination was made In the light of the leprous nature of the skin lesions, it may be that the patient actually had lepromatous prostatitis and osteitis Whether there was any relation between the prolonged and heavy dosage with a powerful synthetic estrogen and the sudden clinical manifestation of a hitherto unsuspected infection by Mycobacterium leprae may interest leprologists, since hormone preparations are used in patients with leprosy for intercurrent conditions It also raises the question whether hormones might be useful adjuvants to other therapy in leprosy It is possible that the predominantly male sex incidence of leprosy during the reproductive years of life is in part determined by hormones The puerperal exacerbations of leprosy suggests that conditions prevail at this time that favor an acceleration of the infection, and these conditions may be related to the change in endocrine balance then obtaining The literature reveals a case of a woman in whom leprosy appeared during treatment with thyroid

Journal of Allergy, St. Louis

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*ACTH and Cortisone in Allergic Manifestations Therapeutic Results and Studies on Immunological and Tissue Reactivity S M Feinberg T B Dannenberg and S Malkiel —p 195

*ACTH and Cortisone in Allergic Diseases Clinical Serologic (Electrophoretic) and Immunologic Studies R A Cooke W B Sherman A E O Menzel and others —p 211

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Absence of Nonspecific Anamnestic Stimulation of Antistreptolysin in Pneumococcus Pneumonia C Y Sugihara and T L Squier —p 264

Allergic Reaction to Aureomycin with Demonstration of Positive Skin Test to Serum Containing Aureomycin E B Brown and M Goodgold —p 273

ACTH and Cortisone in Allergic Manifestations —Fifteen patients with severe and intractable asthma of four months to 54 years' duration were treated with corticotrophin (ACTH) and/or cortisone Corticotrophin was administered four times daily, usually in 20 mg doses, for four to 29 days For most patients the total dose for the course was about 400 to 500 mg, although in three it was over 1,000 mg If the response was satisfactory, the doses were gradually reduced, beginning about the fourth to the fifth day If the response was considered unsatisfactory, cortisone was added, while administration of corticotrophin was continued or reduced Several patients were given cortisone from the start The daily dose in such cases was 200 mg in two injections per day for the first two or three days, reduced subsequently to 100 mg Six patients obtained complete relief, all of them with corticotrophin Incomplete yet satisfactory relief was obtained in four, two of these with corticotrophin, one with cortisone, and one with corticotrophin followed by cortisone Associated nasal symptoms also improved, but less rapidly and less pronouncedly than the asthma In five patients results were slight or questionable After treatment was stopped, relapses occurred in most of the patients Seven additional patients were treated with corticotrophin or cortisone for syndromes other than asthma, one had generalized and weeping atopic dermatitis, two had severe generalized reactions to penicillin administration, one had generalized eczematoid dermatitis, and three had hay fever Satisfactory results were obtained in the patients with dermatitis and penicillin reactions, while moderate symptoms were not definitely removed in the patients with hay fever Corticotrophin and cortisone are of appreciable value in the temporary treatment of certain types and phases of allergic syndromes They are most helpful in intractable asthma, in acute status asthmaticus, and in severe drug reactions Limitations in the usefulness of these hormones are as follows 1 The length of remissions after a single course of treatment varies from a few days to a few months 2 The necessity for frequent injections is a handicap 3 Some types of allergy do not respond Corticotrophin and cortisone are not substitutes for more basic allergic management The dangers and hazards from continuous and sometimes from temporary use of these drugs are numerous, and the hormones must not be employed without a full understanding of their many actions In patients treated with corticotrophin or cortisone the skin reactions to antigens and histamine remained unchanged Quantitative studies of the ophthalmic and nasal reactions in those who had nasal and conjunctival allergy showed them not to be significantly altered Sensitizing antibodies remained unaffected after treatment with corticotrophin or cortisone It is possible that the simple titration tests do not simulate the conditions of chronic allergy and that tests devised to resemble more closely continuous allergic stimulation might show a more decisive influence of these hormones on allergic reactivity

Corticotrophin and Cortisone in Allergic Diseases —Thirty-one patients with persistent severe asthma that was of bacteria or combined bacterial inhalant origin were treated with cortisone or corticotrophin In adults the daily dosage was rarely over 100 mg for cortisone or 80 mg for corticotrophin in divided doses at six hour intervals With children and infants the doses were one half or less of the adult dose Occasionally, a patient was comfortably free of dyspnea by the third day, but in severe cases recovery took from 10 to 14 days In almost all cases relief of dyspnea eventually was substantial, but asthma returned within a few days or weeks after cessation of treatment Eleven additional patients, six adults and five infants with allergic dermatitis, were treated with corticotrophin and cortisone The dosage and the results were the same as in the patients with asthma Five patients with chronic urticaria of many months' duration obtained relief in three to five days with corticotrophin or cortisone, but there was little lasting effect unless a cause was discovered and removed The value of a temporary respite must not be minimized, and the benefits of prolonged treatment with corticotrophin and cortisone have not yet been adequately explored Chemical and electrophoretic studies were made on the serums of 19 adult patients with chronic infective asthma, five adult patients with chronic intrinsic dermatitis, and four children with intrinsic dermatitis (infantile eczema) The patterns in many serums showed distinctly abnormal distribution of the various protein fractions, albumin, and alpha$_1$, alpha$_2$, beta, and gamma globulins Comparative studies suggested that these changes are not the result of the allergic state per se, but are related directly or indirectly to the chronic underlying infection, since similar alterations of protein distribution have been observed in such chronic nonallergic infections as osteomyelitis and bronchiectasis These changes were even comparable to the profound changes recorded by Reiner in lupus erythematosus Immunologic studies indicated that the symptomatic benefits and tissue alterations resulting from treatment with corticotrophin and cortisone are not due to interference with the immediate wheal type reaction of antigen antibody sensitized cells It was further observed that the skin sensitizing antibody of allergic serums is not wholly contained in the gamma globulin fraction of such serums

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New England Journal of Medicine, Boston

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Genital Dermatitis Caused by Penicillin Its Response to Nicotinic Acid G E Morris —p 758
Medicine as a Science Psychiatry E. Lindemann —p 759

Acute Myocardial Infarction.—The authors discuss data obtained from clinical records and gross or microscopic postmortem observations in 100 cases of acute myocardial infarction that occurred in 60 men and 40 women between 1940 and 1949 Without the aid of the electrocardiogram, the clinical diagnosis of myocardial infarction was made correctly in 69 cases Electrocardiograms were taken in 85 cases Microscopic dating at autopsy indicated that the infarction occurred prior to the taking of the electrocardiogram in 75 cases An electrocardiographic diagnosis of recent infarction was made in only 52 (69%) of these Reevaluation of the electrocardiogram in an additional six instances (8%) revealed patterns strongly suggestive of acute infarcts, in two instances a "residual" coronary pattern was present In only 11 cases no changes suggestive of myocardial infarction were noted In 72 of the 85 cases the three standard limb leads with one precordial lead (CF_4) were employed initially In 62 of these infarction had occurred prior to the last electrocardiogram Although there was electrocardiographic evidence of acute infarction in only 45 (72%) of these, an additional nine cases (14%) showed abnormal changes compatible with possible infarction Thus in 86% of cases in which only these four leads were used the presence of acute infarction was either indicated or suggested The anterior wall of the left ventricle was involved in 68 instances, the lateral wall in 23, the posterior portion of the left ventricle in 30, the posterior right ventricle in one, the anterior portion of the interventricular septum in 22, and the posterior septum in six There were eight cases of rupture of the ventricle A close correlation was observed between the clinical and microscopic estimates of the age of an infarct, when Mallory's criteria were used The commonest associated major pathological conditions were pronounced generalized arteriosclerosis in 50 cases, chronic cholecystitis with cholelithiasis in 13 cases, and pulmonary infarcts in nine cases

Reaction of Adrenal Cortex to Stress.—Adrenal cortex response to standardized physical exertion and added emotional stress, as measured by changes in circulating eosinophil levels, was studied in healthy, well trained oarsmen Members of the Harvard varsity and combination crews were observed during a two-week training period and immediately before and after con tests with Yale crews In the varsity crew, within four hours of the first time trial, the original average eosinophil level of 123 was reduced to 19 and after the second time trial to 38 Immediately before the actual race the average count was only 64 and fell to 3 within four hours thereafter In certain oarsmen the lowest level of circulating eosinophils was reached after one hour, whereas in most it was reached only after four hours It should be emphasized that the varsity four-mile race was extremely hard and tense, won by only a quarter of a length, with a spectacular and frightening finish In the combination crew, after the time trial the average initial count of 108 fell to a final 56 On the day of the actual race the initial count was low, averaging 42 and there was no fall at either one or four hours, there was a slight mean rise to 59 eosinophils per cubic millimeter The race differed greatly from the varsity race, since it was won by six lengths, with Harvard leading easily all through and with no doubt of the outcome It was concluded that, in well trained persons, emotional stress, either alone or in combination with muscular activity, may lead to a highly effective adrenal stimulation and may represent a necessary link in the mechanism of adaptation Practical application of eosinophil counts made under conditions of standardized stress may well facilitate the identification of persons with unsatisfactory adrenal response to stress The simplicity of the procedure would permit its use as a screening device In men with active allergy and in two persons whose spleens had previously been removed no deviation from normal response was detected

Public Health Reports, Washington, D C

66 757-788 (June 15) 1951

Oral Cancer Teaching Program in Dental Schools R F Kaiser —p 757
Cancer Research Facilities Construction Grants Awarded Through National Cancer Institute by Public Health Service R G Meader and W W Payne —p 762
Achievement Examination in Subject of Cancer for Medical School Students H R Bierman and J N McClelland —p 769

66 789 822 (June 22) 1951

Mouse-Protective Potency Assay of Typhoid Vaccine—As Performed at the Army Medical Service Graduate School H C Batson M Brown and M Oberstein —p 789
*Rapid Flocculation Test for Diagnosis of Trichinosis. J Bozicevich, J E. Tobie E H Thomas and others —p 806

Flocculation Test in Diagnosis of Trichinosis—Bozicevich and co-workers mention shortcomings of earlier complement fixation and flocculation tests in the diagnosis of trichinosis and describe a new flocculation test, which, they hope, will overcome many difficulties There are descriptions of the preparation of the trichina extract, the stock bentonite, the stock antigen, and the slides and antigen pipets as well as of the test itself The complement fixation test was used as the standard for the evaluation of the flocculation test The data so far available do not indicate a superiority of the flocculation test over the complement fixa tion test, but if they are equally sensitive and specific, the out standing advantages of the former should make it the test of choice With the flocculation test, results can be obtained in minutes, and its performance does not require highly trained personnel It seems likely that the antigen can be prepared com mercially, and, if so, it will be possible for almost any laboratory to perform the test

Virginia Medical Monthly, Richmond

78 281-334 (June) 1951

Toxic Reactions Occurring with ACTH and *Cortisone Therapy* C L. Neale and M D Friedenberg —p 283
Survey of Obstetrics by General Practitioners in Small General Hospital F D Daniel —p 289
Hyperspleninsm in Infancy and Early Childhood Report of Three Cases *J* E Mitchell and K F Menk —p 293
Hemolytic Anemia Following Caesarean Section Treated by Splenectomy *M D Delaney and W M Delaney* —p 299
Treatment of Epilepsy—Study of 11 Consecutive Cases J T Ransone —p 303

Western J Surg , Obst & Gynecology, Portland, Ore

59 141-188 (April) 1951

Synovial Sarcoma Clinical Impression Obtained from Study of 13 Cases. K J Anderson —p 141
Relaxation of *Symphysis* Pubis in *Pregnant* Women by Prostigmine F E. Emery W C. Young M R McCaskill and E. Dodge —p 150
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Observations on 20 Years of Experience in Surgery of Sympathetic Nervous System P G Flothow —p 156
Malignancy of Thyroid. M A Howard —p 163
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Total Gastrectomy in Treatment of Gastric Cancer Review of 16 Cases. H M Blegen —p 171
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FOREIGN

British Journal of Ophthalmology, London

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*Experiences with Malignant Exophthalmos Relationship of Condition to Thyrotoxicosis and to Pituitary Thyrotropic Hormone M A. Falconer and W S Alexander —p 253

Intracapsular Extraction by Kirby s Technique Results in 60 Cases J R Hudson —p 284

Anatomical Study of Schlemm s Canal and Aqueous Veins by Means of Neoprene Casts Part I Aqueous Veins N Ashton —p 291

Early Signs of Trachoma Observed by Slit Lamp Y Ito and Chiang Hua Yu —p 304

Modification of Graves Operation for Epiphora Due to Stenosis of Lacrimal Punctum J B T Thomas —p 306

Non Perforating Cyclodiathermy with Cyclodialysis Circumscripta in Glaucoma V Čavka —p 307

Malignant Exophthalmos· Relation to Thyrotoxicosis and Pituitary Hormone —The series of 12 cases of malignant exophthalmos presented here illustrate the wide variations that may occur in the course of this condition and in its response to orbital decompression, thyroid therapy, and other treatments The authors question whether malignant exophthalmos is a single entity and discuss its therapy and its relation to pituitary thyrotropic hormone and thyroxin metabolism They feel that malignant exophthalmos is a self limiting condition, and, although it is connected with the secretion of pituitary thyrotropin and of thyroxin, the relation is indirect and still unknown Thyroid administration is probably ineffective The effect of any therapy must not be confused with the spontaneous improvement that occurs in the later stages of the condition In one type of case the ophthalmic signs become aggravated after thyroidectomy Therefore, in patients with toxic goiter presenting ocular protrusion as opposed to mere lid retraction, it is wise to avoid thyroidectomy If the thyrotoxicosis is severe, it is probably safer to treat it by bed rest or by one of the slow nonsurgical methods In cases of mild or moderate exophthalmos, where the eyeball is not in danger from exposure, radical treatment should be withheld in the hope that a spontaneous remission may occur Surgical treatment is indicated if exophthalmos becomes pronounced Lateral tarsorrhaphy may be useful, but in the severest cases, as when chemosis of the conjunctiva and corneal ulceration are present, orbital decompression should be considered

British Medical Journal, London

1 1217-1278 (June 2) 1951

*Treatment of Arterial Hypertension by Penta and Hexamethonium Salts Based on 150 Tests on Hypertensives of Varied Aetiology and 53 Patients Treated for Periods of Two to 14 Months F H Smirk and K S Alstad —p 1217

Blood-Group Factors and Physiological Icterus I B Wexler and A. S Wiener —p 1228

*Angiocardiography in Congenital Heart Disease Anaesthesia and Technique D M Carnegie —p 1230

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Carcinoma of Prostate Comparison of Methods of Diagnosis J E Semple —p 1236

Diagnostic Value of Glucose Content of Serous Pleural Effusions W L. Calnan B J O Winfield M F Crowley and A Bloom —p 1239

Acute Porphyria with Unusual Features E Grossfeld —p 1240

Methonium Salts in Hypertension —Although the curarizing effects of the methonium series first attracted attention, it was soon found that the pentamethonium and hexamethonium halides, shown to be ganglion blocking agents, produced reductions in blood pressure in normal and in hypertensive persons Smirk and Alstad investigated the response to these methonium halides in 150 cases of hypertension of varied etiology Fifty-three patients have been under treatment for periods of two to 14 months It was found that there is a close similarity in the hypotensive effects of pentamethonium and hexamethonium bromides, though tests show that hexamethonium bromide is usually slightly stronger in action These investigators could interchange these substances at approximately the same level of subcutaneous dosage Drops in blood pressure following methonium injections are influenced by posture, being greater as the patient approaches the vertical Under comparable conditions patients with higher pressures tend to have greater lowering of blood pressure after hexamethonium bromide injections. Apart from some of the patients with impaired renal function, almost all hypertensives can be controlled by these drugs Among those with impaired renal function the four selected for treatment were readily brought under control without deterioration in their renal excretory capacity Repeated administration gives rise to considerable tolerance, so that 5 or 10 times the original dose may be required to produce the same effect Development of tolerance to hexamethonium bromide gives an equivalent degree of tolerance to pentamethonium bromide, and vice versa The hypotensive actions of pentamethonium and hexamethonium salts are enhanced with a salt poor diet (0 2 gm of sodium in 24 hr) to such a degree that dangerous reactions may occur if the effects of this potentiation are not allowed for in determining dosage Hypertensive headaches can be relieved in most patients There was great improvement of dyspnea, and papilledema and retinal exudates subsided Pulmonary congestion disappeared, and there are indications of reduction in heart size and electrocardiographic improvement

Angiocardiography in Congenital Heart Disease —Some investigators assert that angiocardiography is simple and harmless, but the results in 172 cases at Guy s Hospital contradict this statement In 115 of these cases, angiocardiography was performed with the patient under general anesthesia and in the remaining 57 with local analgesia and adequate premedication The ages of these patients ranged from 3 to 37 years Most patients under 12 required general anesthesia Three patients died during the procedure—two while under general anesthesia and one who received local analgesia only A fourth patient died on return to the ward In another patient, aged 3, signs of cerebral anoxia developed, but finally the child recovered A history of cyanotic attacks or of attacks of unconsciousness is of grave prognostic significance All four children who died had had such attacks as did the child of 3 who had cerebral anoxia Since even the slightest degree of anoxia involves grave dangers, every effort should be made to prevent oxygen lack Atropine should be given (1/100 grain [0 60 mg]) half an hour preoperatively to any patient over the age of 1 year, so that there are no secretions from the tracheobronchial tree Angiocardiography should be done in an x ray theater with full surgical and anesthetic equipment to deal with any emergency The patients should be kept in the x ray department for at least 15 min after the operation Collapse occurred within this period in all four of the fatal cases For the premedication of older patients pentobarbital and atropine are recommended, and for the younger ones rectally administered thiopental and atropine Quinidine and a test dose of iodopyracet solution (diodone") should also be given preoperatively Cyclopropane, ether, and oxygen, given through a cuffed endotracheal tube, form the anesthetic of choice Procaine should be administered intravenously through a large cannula inserted into the vein under direct vision both before and after the injection of diodone Blood pressures and electrocardiographic tracings ought to be recorded

Canadian Journal of Public Health, Toronto

42 117-168 (April) 1951 **Partial Index**

Antihistamines in Treatment of Common Cold In Industry D C. Bews —p 117

Mortality in Terms of Lost Years of Life J H. Doughty —p 134

*Nutrition for Older People E. W McHenry —p 142.

Oculoglandular Tularemia Transmitted from Contaminated Sewer Water W R. N Lindsay and J W Scott.—p 146

Nutrition for Older Persons.—The health of older persons is becoming of increasing concern as the percentage of these persons increases in the population Protein is one type of food constituent that older persons frequently neglect, and meat, cheese, and milk are unlikely to be eaten in adequate amounts This neglect is due to a mistaken notion that meat is harmful for older persons Little or no cheese is eaten, because of the old wives tale that cheese is indigestible and constipating Little milk is taken, because these persons grew up in an age when the value of milk was not appreciated Most persons know that protein is needed for growth, but it is generally not realized that there is a constant destruction and loss of body protein that must be replaced from the food supply at any age The needs of older persons for calcium and iron should have particular attention If calcium intake is insufficient to maintain a fairly constant amount of calcium in the blood, calcium can be withdrawn from the bones, with consequent weakening of the bone structure It is likely that the increased fragility of the bones of many older persons is the result of a long standing inadequate supply of calcium in the diet Most vitamins are needed as much in age as in youth The author gives a list of food essentials for older persons and stresses that long standing food prejudices and long standing faulty food habits form one of the main causes of a poor state of nutrition in older persons

Deutsche medizinische Wochenschrift, Stuttgart

76 725-756 (June 1) 1951 **Partial Index**

Experiences with Trichlorethylene as Anesthetic in Childbirth H Hosemann and T Hickl —p 725
Function of Suprarenals and Tuberculosis K H Pfeffer E Scherer and H Staudinger —p 727
Ophthalmologic Complications in Canicola Fever (Leptospirosis) H Beleke and R. Bandau —p 729
*Vascular Component in Clinical Picture of Epilepsy E Förster —p 732
*Endoscopic Transpleural Sympathectomy According to Kux in Treatment of Duodenal Ulcer C Job and R Villinger —p 734
*Therapeutic Use of Procaine Hydrochloride Clinical Experiences R Mancke W Masuch and G Orzechowski —p 737

Vascular Component of Epilepsy —Forster demonstrates that in regard to symptoms there is a parallelism between epilepsy and brain lesions with a vascular component such as in strangulation, carbon monoxide poisoning, and disorders of the vessels of the brain Impairment of the blood perfusion of the brain is an essential factor in all these conditions The parallelism in the motor symptoms during the recovery phase of strangulation, carbon monoxide poisoning, and convulsive attacks, to which may be added temporary pyramidal symptoms, suggests that vascular factors are chiefly responsible Penfield has pointed out that vaso constriction may persist in the brain for a time after the epileptic attack has subsided

Endoscopic Transpleural Sympathectomy for Duodenal Ulcer —The endoscopic transpleural sympathectomy that Kux recommended for the treatment of duodenal ulcer in 1948 has been used at the clinic of the University of Imsbruck for three years Kux himself has performed it in about 350 cases without a fatality A thoracoscope is introduced into the pleural cavity through an intercostal space The opening made into the thoracic wall is hardly more than 1 cm long A preliminary pneumothorax collapses the lung so that the portion of the sympathetic that passes through the costovertebral sinus becomes visible After the sympathetic and splanchnic have been divided with the cauter the pneumothorax is suctioned off The method requires only about 15 min can be carried out with the patient under local anesthetic, and causes no disfiguring scars Furthermore, it involves almost no risk for the patient, most of the patients can be discharged from the hospital three days after the intervention and can resume their occupations in a short time This treatment is restricted to duodenal ulcers because with gastric ulcers the possibility of malignancy must always be kept in mind, particularly if the patient is over 40 In a follow up of 110 of the patients in whom Kux had performed a transpleural sympathectomy, results were found to be the same regardless of whether the operation had been done only on the right side or on both sides, provided it had been radical A few patients who had had the operation on the right side later required sympathectomy also on the left side because of recurrence of symptoms but the expected improvement was still not realized In all of these patients the peptic ulcer had begun before the age of 20 Nearly all the other patients who had undergone radical resection on the left side, when a nonradical operation on the right side had been followed by recurrence, remained free from symptoms after the second intervention Radical sympathectomy on the right side is necessary for the success of the intervention, but bilateral radical operation is unnecessary Radical operation on the left side should be done only if for technical reasons the operation could not be radical on the right side Patients in whom the ulcer developed before the age of 20 have a much less favorable prognosis than those in whom the ulcer develops later in life

Procaine Hydrochloride Treatment —The authors compared the therapeutic effect of a combination of procaine hydrochloride and solution of honey with that of procaine hydrochloride alone in allergic disorders (bronchial asthma colic, and diarrhea) Five patients were studied It was found that the preparation containing the honey was tolerated better than the plain solution of procaine hydrochloride The latter must be given very slowly, if the injection is made intravenously, whereas the honey compound can be injected more rapidly Apparently the honey compound is not quite so effective as procaine hydrochloride alone but the difference is apparently only quantitative and can be compensated for by larger doses The honey and procaine hydrochloride proved effective in all types of spastic conditions Its undesirable secondary effects were generally mild

Irish Journal of Medical Science, Dublin

305 193 240 (May) 1951

Surgery of Mitral Stenosis P T O'Farrell and others —p 193
Calcification of Left Auricle P T O Farrell —p 211
Hearing Aid Clinics and Rehabilitation of the Deaf R S Stevenson —p 213
*Oesophagectomy (With Report on Successful Case in Which Presternal Gastro-Oesophageal Anastomosis was Performed) F J Morrin —p 225
Visceral Thrombophlebitis Migrans Report of Case and Review of Literature P Corridan and R Mulcahy —p 232

Esophagectomy.—After briefly reviewing the symptoms of carcinoma of the esophagus Morrin discusses the technical difficulties encountered in the surgical treatment He evaluates different surgical techniques and says that he prefers the operation suggested by Taylor, because it is applicable to a majority of cases, it can be done in stages, it has fewer difficulties of ap proach and it obviates the fatal risk from leakage of an intrathoracic anastomosis He describes a case in which he performed this three stage operation with satisfactory results In the first stage he resected the thoracic esophagus and created a cervical esophagostomy and epigastric cardioesophageal stoma In the second stage the stomach was mobilized brought out through the abdominal wall, and passed upward through a subcutaneous tunnel in front of the sternum to meet the esophagostomy In the third stage the cervical esophageal stump was anastomosed to the stomach and continuity of the alimentary tract was reestablished Three months later the patient was eating without difficulty and living a normal life

Journal of Laryngology and Otology, London

65 317 396 (May) 1951

Influence of Heredity on Pneumatization of Temporal Bone H W Schwartz.—p 317
Nerve Supply of Laryngeal Muscles A F Williams —p 343
Trotter s Syndrome and Associated Lesions N Asherson —p 349
*Tuberculosis of Middle Ear Treatment with Streptomycin A R Dingley —p 367

Streptomycin in Tuberculosis of Middle Ear —The first case reported in this paper was that of a boy 6 who while in bed for 10 months for a tuberculous pulmonary lesion had a rupture of the right tympanum followed by four weeks of profuse discharge Streptomycin therapy (1 gm daily in divided doses) was started 10 days after his admission to the hospital and was continued for three months The aural discharge lessened after two or three weeks of treatment, and it was found that the tympanic membrane was bulging and had a perforation that was choked with a granular mass There were three miliary tubercles in the tympanic membrane Through the intact anteroinferior segment yellowish areas of tuberculous material were seen After the granular mass was extruded through the perforation, there was an increased discharge, which then ceased followed by healing of the drum The membrane was normal except for a thin scar, and hearing was unimpaired The pulmonary lesion also seems to have cleared The second case was that of a girl of 21 who had been under treatment for pulmonary tuberculosis for two years A rupture of the right tympanum followed two weeks after an operation to compress the lung After six weeks of otorrhea, the ear was painful, with profuse mucopurulent discharge A greyish membrane could be seen through a large perforation Much destruction of membrane and ossicles had occurred Tubercle bacilli were recovered from the aural discharge The patient was given 1 gm of streptomycin daily and 12½ grains (0 78 gm) of paraaminosalicylic acid A total of 40 gm of streptomycin was administered in six weeks, at the end of which time the ear was dry and healthy, but with much destruction of membrane and ossicles remaining The hearing, though much diminished, was better than had been expected Streptomycin apparently played a vital part in the improvement of these two patients Early diagnosis and prompt treatment is the most important factor in preservation of hearing and prevention of destruction of tympanic structures

Klinische Wochenschrift, Heidelberg

29 333-364 (May 15) 1951 **Partial Index**

*Anemia Refractory to Iron but Responsive to Cobalt Therapy Question of Occurrence of Thalassemia Minor in Germany L. Heilmeyer W Müller and H Schubothe —p 333
Morphology Physiology and Pathology of Thrombocytes H Braunsteiner —p 335
*Pathogenesis of Endocrine Syndromes in Tuberculous Meningitis P Bünger —p 338
*Epidemiology of Toxoplasmosis Dogs as Source of Infection of Human Toxoplasmosis E Otten A Westphal and E Kajahn —p 343
Pathogenesis of Hypochromic Anemia Following Gastric Resection. D Remy —p 346

Thalassanemia in Germany —Heilmeyer and associates present the histories of three patients with characteristic symptoms of the mild form of thalassanemia (familial erythroblastotic anemia), also known as Mediterranean, or Cooley's anemia This anemia is of the hypochromic type The blood smear shows many target cells in the presence of anisocytosis and poikilocytosis, reduced diameter, and reduced volume of erythrocytes The osmotic resistance of erythrocytes in hypotonic solution of sodium chloride is greatly reduced The anemia is resistant to iron therapy but improves noticeably with cobalt therapy Icterus and splenic tumor were absent in the patients described This is understandable in view of the fact that the anemia was mild There were no persons of Mediterranean blood in the ancestry of these patients Thus it must be assumed that this form of anemia may occur in Germans Similar blood pictures were observed in the parents and siblings of two of the patients

Endocrine Disturbances in Tuberculous Meningitis.—The examination of 120 patients with tuberculous meningitis who had been treated with streptomycin, paraaminosalicylic acid, and amithiozone revealed endocrine symptoms, which in view of their multiformity indicated disturbances in controlling centers Four cases are reported in detail One is of a man, 42, with obesity of the general dystrophic type, impotence, and hemianopsia on the left, as well as disturbances in carbohydrate metabolism The second patient, a boy, 16, had dystrophia adiposogenitalis with bluish red striae and impairment of the oculomotor function The third patient, a woman, 26, had marasmus due to diencephalic disturbances with cachexia, hypertrichosis, and left sided hemianopsia The fourth patient, a man, 49, had diabetes insipidus and disturbances in carbohydrate metabolism A review of the literature shows that similar cases occurred earlier, so that streptomycin and the chemotherapeutic substances cannot be held responsible for the development of these symptoms Vascular processes, which nearly always occur in the forms of meningitis and which take a prolonged course, are probably the pathogenic factors in these endocrine disturbances, and they probably cause ischemia and malacia in the region of the sympathetic nuclei of the diencephalon Thus the endocrine symptoms are a manifestation of a disturbance in the diencephalic system

Dogs as Source of Human Infection with Toxoplasmosis —A number of reports in the literature suggest dogs as the possible source of infection in human toxoplasmosis Otten and associates examined 122 dogs for the presence of toxoplasmosis by means of the Sabin Feldman serum dye test The test was positive in 49 dogs This high incidence of positivity is explained by the fact that many of the dogs tested had symptoms suggestive of toxoplasmosis, such as neuritis, partial paralysis, tonoclonic convulsions, and gastroenteritis with diarrhea Some latent infections were found It has been estimated that from 2% to 5% of the dogs in Hamburg are infected with toxoplasmosis The Sabin Feldman dye test was also made on 38 persons who had been in contact with 23 dogs in which this test had been positive Twenty-three of the 38 persons gave a positive reaction to the test Five dog-owners who were tested within eight days of the appearance of clinical manifestations of toxoplasmosis in their dogs gave negative reactions The dogs in question showed the neurological picture of toxoplasmosis Two of six dog-owners, whose dogs had the chronic form of toxoplasmosis with predominantly neurological signs, reacted positively to the test. Six of eight persons who had been in contact with four dogs with acute toxoplasmosis accompanied by severe diarrhea had positive reactions Ten of 11 persons who had been in contact with dogs having a mixed symptomatology indicating neurological and general systemic infection with toxoplasmosis gave a positive reaction Thus it appears that those dogs in which toxoplasmosis produces ulcerative proctitis and diarrhea play an especially important role in the transmission of the disease to humans

Krebsarzt, Vienna

6 129-184 (June 1) 1951 **Partial Index**

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Importance of Examination of Vaginal Secretion for Detection of Cancer of Female Genitalia R. Bayer —p 147
*Incidence and Type of Primary Cancer of Liver J Zeitlhofer —p 154
Irradiation Therapy in Cancer of Larynx in Light of International Research. E Ruckensteiner —p 161

Incidence and Form of Primary Cancer of Liver.—The incidence and form of primary cancers of the liver were studied in the necropsy material of the Pathologic Institute of the University of Vienna It was found that cancer of the liver is more frequent in men than in women and that it is particularly frequent in the age group from 50 to 70 Nodular forms accounted for 67% of the cancers and diffuse forms for 33% Histological studies revealed that 76% of the carcinomas were of the hepatocellular and 24% of the cholangiocellular type An apparent increase in the incidence in cancer of the liver, which involved only the diffuse forms, cannot be explained completely by the increased incidence of hepatic cirrhosis and its malignant degeneration nor by the increase in persons in the higher age groups It is suggested that the presence of cancerigenic dyestuffs in foods, such as butter yellow, may play a part. These substances might favor the development of carcinoma in cirrhotic liver, for instance, where regenerative processes are already increased

Lancet, London

1 1133-1186 (May 26) 1951

Physical Exercise Its Clinical Associations A Abrahams —p 1133
*Sequelae of Radical Gastric Resections Clinical and Metabolic Findings in 35 Cases. R H F Brain and F A R. Stammers —p 1137
Prevention and Treatment of Travel Sickness with Promethazine Chlorotheophyllinate J Harper —p 1141
Fluid Mechanics and Dynamics of Transfusion Rapid Replacement of Severe Blood Loss D G Melrose and R Shackman —p 1144
Sickle-Cell Anaemia in Greece C. Choremis N Zervos V Constantinides and L. Zannos —p 1147
Stenosing Tendovaginitis at Radial Styloid Process Review of 30 Cases D A C. Reid —p 1149
"Tennis Thumb" Tendinitis with Calcification in Flexor Pollicis Longus M C. Oldfield —p 1151
Curettage in Diagnosis of Cervical Cancer Modified Spoon Curette A F Anderson —p 1152.
Osteomyelitis Due to Friedländer s Bacillus D A. Muskat and M Findlay —p 1154
Lethal Effect of Morphine in Chronic Cor Pulmonale N J Roussak —p 1156
Streptomyces Fermentation Derivatives in Acute Leukaemia R. D Barnard —p 1157
Fibrosarcoma of Tongue After Interstitial Irradiation Report of Case P Deller —p 1159

Sequelae of Radical Gastric Resections —Advances in surgical technique have made possible increasingly radical resections, but the question must be raised whether such extensive eradications are psychologically and physiologically justified The authors investigated in 35 patients the sequelae of total or near total gastrectomies, particularly the failure of the patient in these cases to gain weight and strength and their liability to diarrhea, anemia, and deficiencies of vitamin B complex They list the possible causes of the disturbances observed, chiefly the difficulties of ingestion and defective absorption Follow up observations on 33 patients are summarized Studies on the fat metabolism suggest that the main causes of wasting after radical gastrectomy are poor capacity for food, associated with the dumping syndrome and malabsorption of fat. To compensate for these defects, a diet with a high fat content is recommended From 100 to 120 gm of fat should be eaten daily, with a correspondingly high caloric intake and multiple small meals, so that fat is taken eight to 10 times in the 24 hours The patient should not drink with meals and should avoid sugar, protein hydrolysates and other substances capable of producing a high intrajejunal osmotic pressure, and withdrawing fluid from the bowel, thus causing further distension and perhaps inducing the dumping syndrome With this regimen, some patients in the present series have managed to eat more than their normal pre operative intake and have therefore gained weight The blood picture after radical gastrectomy is characterized by a high incidence of macrocytosis No evidence of iron deficiency was found Vitamin B deficiencies can be prevented by the routine administration of vitamin B complex and by the eradication of septic processes such as the multiplication of organisms in the upper alimentary tract and infections in the subphrenic space or pleural cavity Large doses of nicotinic acid and riboflavin given before and after operation, have reduced the incidence of vitamin B deficiency

1 1187-1238 (June 2) 1951

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Orthostatic Albuminuria Time Saving Method of Diagnosis A Watson —p 1196
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*Treatment of Tuberculous Cervical Adenitis with Para Aminosalicylic Acid. G J Morris and R G Prosser Evans —p 1199
*Toxoplasmosis in Hares in Denmark Serological Identity of Human and Hare Strains of Toxoplasma M Christiansen and J C Siim.—p 1201
Bowel Rhythm in the Healthy Infant Its Suggested Relationship with Chronic Constipation. I Gordon —p 1203
Ophthalmoscopic Detection of Microfilaria of Onchocerca Volvulus J W R. Sarkies —p 1205
Lipoid Pneumonia (Non Inhalation) in Carcinoma of Lung Treated by Radiotherapy S J De Navasquez, J R Trounce and A B Wayte —p 1206
Neuromuscular Incoordination of Swallowing in the Newborn J C. Macaulay —p 1208
Changes in Cerebrospinal Fluid After Pneumo-Encephalography E R Bickerstaff —p 1209
Suppurative Hepatitis and Diaphragmatic Paralysis J W Todd —p 1210

Paraaminosalicylic Acid for Tuberculous Cervical Adenitis.—Fifty-one patients with tuberculous cervical adenitis were treated by aspiration of pus and instillation of sodium paraaminosalicylate in the past two years A 10 year survey of results of other methods provided a basis for comparison The abscess was aspirated with a large bore needle inserted directly into its superficial wall The contents were completely evacuated, and up to 1 ml of a 20% solution of sodium paraaminosalicylate was instilled into the abscess cavity through the aspirating needle On withdrawal of the needle very little of the solution escaped, even when under moderate tension Aspiration and instillation were repeated at weekly intervals, until the contents of the abscess cavity became serous and no further pus formed In those cases in which a sinus had formed along the needle track, up to 1 ml of a fairly thick sterile jelly containing 20% sodium paraaminosalicylate was injected through the orifice of the sinus If a sinus ulcer developed, a cream of similar strength was applied superficially and renewed daily until the granulation tissue of the ulcer floor was clean Sodium paraaminosalicylate apparently reduced significantly the area and depth of residual scarring in suppurative tuberculous cervical adenitis More than half the treated patients were cured, with little or no evidence of the original lesion remaining in the skin The healing time was substantially reduced The results in general, compare favorably with those achieved by more active measures (curettage) and the patient need not be hospitalized

Toxoplasmosis in Hares in Denmark.—Since 1935 diseases in wild animals have been systematically investigated in Denmark This made it possible to examine many wild hares found dead in the open field or shot in a sick condition Some of these hares were found to have toxoplasmosis Histological examination showed Toxoplasma in large numbers in the organs with pathological changes (especially the spleen) and also in the brain Toxoplasma strains were isolated by inoculating intraperitoneally into mice 1 ml of a 10% suspension of spleen from infected animals within 24 hr after they had died Toxoplasmosis in hares in Denmark has its maximum incidence in the period January to March It occurs in hares as an acute fatal systemic disease, only a few weak positive serological reactions have so far been found in healthy hares The Toxoplasma of hares appears to be serologically identical with the human strain RH, and is equally pathogenic Consequently, in handling recently dead toxoplasmic hares there is a risk of infection Pregnant women should not handle recently shot hares Animals frozen at —30 C and later thawed do not seem to be infective

Lyon Chirurgical

46 385-512 (May-June) 1951 **Partial Index**

*Results of Conservation of the Sphincter in Surgical Intervention for Cancer of the Rectum P Santy P Michaud and P Replumaz.—p 385
Phlebography of Pelvis by Injecting the Contrast Medium Through the Pubis J Ducuing P Guilhem D Enjalbert and others —p 393
Experimental Study on Partial or Total Ligature of the Aorta at Various Levels R. Leriche J Kunlin and C Boely —p 405

Surgical Treatment of Cancer of Rectum—Conservative operations were done in 136 patients with cancer of the rectum, consisting of resection in 31 and total excision with meticulous dissection of the mucosa of the anal canal and transsphincteral lowering of the sigmoid flexure in 105 The most important advantage of the transanal total excision is that colostomy is completely eliminated The abdominosacral approach was used in 115 cases and the sacral approach in 21 There were only 12 operative deaths an operative mortality rate of 8 8% Of 71 patients with cancer of the rectum subjected to nonconservative operations 10 died an operative mortality rate of 14% Late results in patients subjected to conservative operations by lower approach were highly satisfactory since of 19 patients subjected either to resection or to transanal excision, 12 (63%) survived for more than five years while of 52 patients operated on by abdominosacral route only 20 (40%) survived for more than five years A questionnaire was sent to all the surviving patients in an attempt to ascertain the functional results of the conservative surgical treatment Of 70 patients from whom answers were received, 46 had excellent function of the sphincter muscles with complete continence and perfect anatomic condition of the anus, 17 had impaired function, and some required dilatation for stenosis Seven patients had complete incontinence, caused either by sacral fistula with anal stenosis, or complete sloughing of the lowered segment, which required the establishment of a left iliac anus Generally speaking the authors believe that the preservation of the anal function in the exeresis of carcinoma of the rectum is justified

Medical Journal of Australia, Sydney

1 497-532 (April 7) 1951

Lewis Blood Antigens and Antibodies R T Simmons and R Jakobowicz.—p 497
Carcinoma of Ampulla of Vater C Osborn —p 501
Limitations of Pure Psychogenesis B Mulvany —p 505
Nitrous Oxide Thiopentone-Curare Anaesthesia Preliminary Report on Apparently Satisfactory Technique R. V Pratt —p 510

1 533-568 (April 14) 1951 **Partial Index**

Management of Flail Lower Limb Following Poliomyelitis E Price —p 540
Some Observations on 100 Cases of Ankylosing Spondylitis L. J A Parr P White and E Shipton —p 544

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

95 1341-1404 (May 5) 1951 **Partial Index**

Use of Preserved Calf Bone for Transplantation into Human Subjects W G Meiss —p 1349
*Effect of Cola Drinks Containing Caffeine D A A Mossel —p 1357
*Transplantation of Ureters into Large Intestine J F Ort and R Sajidiman —p 1366

Action of Cola Drinks with Caffeine Content.—Some cola drinks prepared in the Netherlands contain caffeine in amounts varying from 20 to 75 mg per 200 cc bottle, whereas some other nonalcoholic drinks have no caffeine It should be made obligatory to declare the contents of nonalcoholic drinks on labels As long as it has not been demonstrated that the caffeine that is added to cola drinks is not harmful when these drinks are taken over long periods, children, persons with gastric disorders, and all those for whom caffeine is likely to prove harmful should be advised not to take these drinks The fact that some cola drinks contain phosphoric acid at the very low pH of 2 5 involves the added risk that their consumption may cause dental erosion

Transplantation of Ureters into Large Intestine.—A new technique for the implantation of the ureters into the intestine is recommended The method involves 1 Extraperitonealization of the surgical field 2 Implantation of the extraplevic portion of the ureters, because it is difficult to displace the distal portion with its more or less individual vascularization In this way, the implanted portion of the ureter retains an adequate blood supply and the dangers involved in inadequate circulation are avoided 3 Implantation of both ureters into a receptacle formed from the sigmoid, which is more or less separate from the other portions of the intestinal tract The adequacy of this method is proved by the fact that patients in whom it has been employed are alive and well five years after treatment

95 1533 1600 (May 26) 1951 **Partial Index**

Body Surface Temperature J W H Mall —p 1544
Multiple Primary Malignant Tumors G H W Jordans —p 1555
Echinococcosis of Spleen A Pasma —p 1560
*(Pseudo?) Liver Abscess and Tumor of Colon Caused by Lamblia Intestinalis W Beukema —p 1568

Giardiasis as Cause of Liver Abscess and Tumor of Colon—Giardiasis (lambliasis) was discovered in a man, 47, in whom an abscess of the liver developed that perforated through the diaphragm Exudate developed in the pleural cavity, and there was infiltration into the middle lobe of the right lung Two series of treatments with quinacrine hydrochloride resulted in complete clinical recovery The complaints described arose a few months after resection of the colon because of a tumor, which on pathological anatomic examination appeared to consist of nonspecific inflammatory tissue It is possible that this tumor also had been caused by Giardia. The author feels that in cases in which no explanation can be found for serious abdominal complaints, fresh feces and warm duodenal contents should be searched for Giardia Lamblia

Nordisk Medicin, Stockholm

45 705 744 (May 9) 1951 **Partial Index**

*Scleroderma V Dreyer —p 705
*Frontal Lobotomy Psychiatric Experiences I Blomqvist and O Börjeson —p 710
*Frontal Lobotomy Surgical Experiences in 360 Cases K. H son Holmdahl —p 714
Retrograde Amnesia After Electroshock Treatment. H. Kehlet and V Lunn —p 716
Fatal Complications After Bulbar Tractotomy J Cammermeyer —p 719
Electroencephalographic Studies on Cramp Threshold in Children of Epileptics B Harvald —p 726
Treatment of Psychopathic Criminals G K Stürup —p 730
Polyostotic Fibrous Dysplasia (Albright s Syndrome) with Multiple Tumors of Soft Tissue H C. Arnesen and L Nitter —p 735

Scleroderma—Dreyer deals especially with the internal manifestations of scleroderma While the disease is relatively infrequent, particularly in the generalized form, its varied symptomatology, obscure etiology and pathogenesis, and its relation to other systemic diseases have received much attention in the literature It occurs twice as often in women as in men There are circumscribed and diffuse forms The visceral manifestations appear in the latter Scleroderma with internal changes has a marked chronic course The organs oftenest affected are the esophagus, heart, and lungs The characteristic changes in scleroderma appear in the blood vessels and in the connective tissue The small arteries and arterioles especially are affected, with proliferation of intima, and in recent cases, hyperplasia of media, which gradually is followed by fibrosis of media and frequently by thickening of adventitia In the connective tissue the loose collagenous fibers are transformed into dense homogeneous fibrous tissue, the edema of the tissue seen in the earlier stages is supplanted by a spreading hyperplasia of the collagenous fibrils, with degeneration and atrophy of all other connective tissue elements Since the etiology and in part also the pathogenesis of scleroderma remain unexplained, treatment rests on an empirical basis Scleroderma, though most often progressive, may show definite variations in its course Spontaneous remissions are not unusual, and the disease may remain stationary after a shorter or longer time of development. The view is supported that scleroderma is a systemic disorder localized to the collagenous connective tissue.

Frontal Lobotomy Psychiatric Experiences—Bilateral frontal lobotomy was performed in 1946 and 1947 in 131 patients, aged 19 to 71, with predominantly advanced cases with poor prognosis, in which the usual methods of treatment had brought no lasting benefit There were six deaths Sixteen patients were discharged as able to work, 15 were discharged to their homes, seven to homes for the aged or the like, 49 were more or less improved but not fit for discharge, and five became worse. Observation for an average of over three years showed that complications as described in the literature developed in a number of cases Lasting psychic changes in the form of typical frontal lobe syndrome, with indolence, euphoria, and apathy, were seen in a few instances Frontal lobotomy in selected chronic cases, where other less radical methods of treatment have proved ineffective, is considered a valuable procedure. With interested surgeons good therapeutic results can be achieved with low mortality rates

Frontal Lobotomy Surgical Experiences in 360 Cases.—Report is given on 360 lobotomies performed in a general surgical department, with nine deaths, of which five were due to intracranial hemorrhage, two to meningoencephalitis, and two to marasmus A graduated blunt probe was used, and the incisions in dura were reduced to small punctures. Dura and galea aponeurotica were not sutured Holmdahl states that in most cases the blood pressure sinks momentarily on incision of the white matter and afterward slowly rises Absence of the fall in blood pressure may be a sign of incomplete incision of the white substance Rapid increase in blood pressure after the intervention is an important sign of postoperative intracranial hemorrhage and is an indication for operative revision. More marked hypertension and arteriosclerosis are relative contraindications. Continuous postoperative control of the blood pressure is of the greatest importance. Roentgenologic localization of the ventricular system before the intervention and injection of contrast substance before control of complicating hemorrhage are unnecessary and not without danger

Obst y Ginecol Lat Americanas, Buenos Aires

9 131-188 (May) 1951 **Partial Index**

*Carcinosarcoma of Uterus. J C. Ahumada R. Sammartino and L. A. Arrighi.—p 131

Carcinosarcoma of Uterus—In the last 20 years Ahumada and collaborators observed 27,000 patients in a gynecologic clinic of Buenos Aires Carcinosarcoma of the uterus was found in 10 cases (0 04%) The authors define carcinosarcoma of the uterus as a mixed tumor consisting of both carcinoma and sarcoma cells with or without predominance of one type of cell They divide carcinosarcoma into two groups, namely, collision carcinosarcoma and composition carcinosarcoma In collision carcinosarcoma there are distinct carcinomatous and sarcomatous zones in the tumor Where these come in contact there is mutual invasion of neoplastic cells The two tumors appear to originate at separate sites The gross types of tumor most frequently found are diffuse carcinoma and polypoid sarcoma. The predominant histologic types seen in tumors of the cervix are squamous cell carcinoma and polypoid or fibroblastic nodular sarcoma. When the tumor develops in the body of the uterus it assumes the form of cylindrical cell carcinoma and undifferentiated sarcoma. Composition carcinosarcoma of the uterus does not have a characteristic macroscopic appearance Microscopically it shows an intermingling of carcinomatous and sarcomatous cells, either one of which may predominate The symptoms are similar to those of other tumors of the uterus The diagnosis is made by microscopic study of tissues taken by curettage or of the surgically removed tumor The metastases are sarcomatous, carcinomatous, or carcinosarcomatous The treatment is surgical When the tumor is in the cervix the treatment consists of an operation of the type used in cancer of the endometrium When the tumor is in the body of the uterus Wertheim's operation, followed in all cases by x ray treatment, is indicated In the cases reported by the authors the tumor was of the collision type in three cases and of the combination type in seven Tumors of the collision type have a better prognosis than those of the combination type, which are very malignant.

Philippine Medical Association Journal, Manila

27 155-202 (March) 1951

Stress. A B M Sison —p 155
Scleroma (Rhinoscleroma) First Case Report in the Philippines M G Tan and S A Simuangco —p 163
Venereal Disease in Female Vagrants A A Lozano —p 171
Hypersplenism G L. Reyes and A E Jose.—p 175
Can the Method of Medical Teaching be Improved? R. V Guiang —p 180.

Praxis, Bern

40 455-478 (May 31) 1951 **Partial Index**

*Abortifacient Effect of Ovarian Hormone Preparations E Läuppi. —p 455
Treatment of Anal and Genital Eczema in General Practice. G H Klövekorn.—p 459
Clinical Experiences with the Combined Administration of Calcium and Vitamin C. E. Stangl —p 460

Abortifacient Effect of Ovarian Hormone Preparations.—In connection with a law suit involving abortion, the question whether ovarian hormone preparations could induce abortion had to be decided. One of the substances in question was an estradiol preparation prepared for oral administration, the other was a fluid extract of the total ovary, which contained all ovarian hormones but was free from protein The latter preparation is indicated for use in sexual infantilism, menopausal disturbances, dysmenorrhea, oligomenorrhea, and amenorrhea Both preparations contain estrin, which increases the blood perfusion of the uterus as well as its responsiveness to the stimulus for contractions A predominance of estrin over its antagonist, the corpus luteum hormone, supposedly is responsible for the induction of labor pains (uterine contractions) This paper presents three cases in which women had taken both of the aforementioned products in efforts to produce abortion The oral estradiol preparation produced neither toxic symptoms nor signs of a beginning abortion However, the intake of the fluid extract of the total ovary was followed by palpitation, tinnitus, vertigo, "blacking out," cold sweat, nausea, and, in one instance, by repeated vomiting Genital hemorrhages followed in all three cases, and, in the two cases in which pregnancy was certain, these hemorrhages were accompanied by spasms resembling uterine contractions and the discharge of a mass or a fetus The fact that no other abortifacients had been used in addition to the ovarian hormones and that the patients had been well before the hormones had been taken and that the abortion followed within two or three days after the intake of the fluid ovarian hormone extract is regarded as indicative of an abortifacient effect To be sure, the fluid extract had been taken in a dosage many times that used in the therapeutic application of this extract

Presse Médicale, Paris

59 761-780 (June 2) 1951

Diaphoretic Form of Left Ventricular Failure C. Lian and Brawerman. —p 761
*Selective Separation and Transfusion of Morphologic Elements of Blood J Julliard B Maupin P H. Bonnel and others.—p 762
Postoperative Care of Patients with Extrapleural Pneumothorax J Catta G Picard-Leroy and A Massendari —p 763

Transfusion of Morphologic Elements of Blood.—The authors describe the techniques used to separate the morphologic elements of blood from plasma and the therapeutic results obtained from their intravenous administration Red blood cells are separated from plasma by centrifugation and used therapeutically after simple dilution or after several washings with isotonic sodium chloride solution to free them of plasma and white blood cells Leukocytes can be obtained in a concentrated suspension by pipetting off the superficial layer of white cells from the red cells after routine centrifugation This suspension also contains numerous red cells and platelets White cells can further be separated from red cells by polyvinyl pyrrolidone (P V P) sedimentation and from both red cells and platelets by controlled centrifugation The authors gave 80 transfusions of concentrated red cells and 140 transfusions of washed red cells to patients with various anemias and acute leukemias The red cells were more effective and less expensive than whole blood introduced in smaller volume of fluid in patients with circulatory difficulties, and were well tolerated They were especially effective in hemolytic anemias Twenty six transfusions of concentrated suspensions of leukocytes obtained by ordinary centrifugation or polyvinyl pyrrolidone sedimentation were administered to 10 patients with various blood dyscrasias Although the cells were obtained from persons of the same blood type as the patient, chills and fever occurred in several recipients Treatment had no effect in two cases of acute agranulocytosis nor in three cases of acute leukemia There was transitory improvement in a severe case of infantile agranulocytosis and in one case of chronic neutropenia Prolonged improvement occurred in two cases of chronic neutropenia and in one case of aplastic anemia with purpura Following transfusion an immediate paradoxical leukopenia was frequently observed The beneficial effect in these cases was presumably due either to the supplying of essential leukocytic material or to specific stimulation of the bone marrow The crude white cell suspension obtained by ordinary centrifugation was more useful when the patient had a deficiency of all the formed elements, while the purer suspensions were used in simple agranulocytosis

Proceedings of Royal Society of Medicine, London

44 347-422 (May) 1951 **Partial Index**

Studies in Physiology of Awareness Oximetric Evidence of Role of Anoxia in Certain Psychiatric States J W L Doust —p 347
Approach to the Nasopharynx C. P Wilson —p 353
Problem of Clicking Jaw V E. Ireland.—p 363
*Assessment of Flaxedil (Gallamine Triethiodide B P) A G Doughty and W O Wylie —p 375

"Flaxedil"— Flaxedil,' or gallamine triethiodide (1 2,3 tri [di ethylaminoethoxy] benzene triethyliodide), is a synthetic curarizing agent It has several clinical advantages over tubocurarine With flaxedil there is a greater margin between muscular relaxation and diaphragmatic paralysis Flaxedil has an equally effective but shorter period of action Its action is more readily and rapidly reversed by neostigmine It does not lower the blood pressure This assessment illustrates that flaxedil is a very versatile and safe muscle relaxant The fact that it is a short acting curarizing agent with an effective antidote has widened the field of application for this type of drug Its short period of action is not only one of its main advantages but also its main limitation Though it can be used for prolonged relaxation and for control of respiration, for frequent injections, the longer-acting tubocurarine seems to be more suitable Flaxedil's one main disadvantage—tachycardia—has been observed in many patients under thiopental sodium, nitrous oxide, and oxygen anesthesia, but not to the same extent under cyclopropane Though the rapid pulse may be disquieting to the anesthetist, and may, in theory, mask danger signals of the patient's general condition these investigators have been unable to attribute to tachycardia any undesirable effects

Revista Paulista de Medicina, São Paulo

38 91 182 (Feb) 1951 **Partial Index**

Tetanus Following Induced Abortion I Nussenzveig O Stersa O N Bossoi and A Mossa —p 91
*Treatment of Cancer Inhalations of Vapor of Overheated Ether Preliminary Note W Treuherz.—p 151

Treatment of Cancer—The vapor of overheated ether has been found to have bactericidal effects on tubercle bacilli in cultures (Fornet) and beneficial effects, when inhaled, on cancer and metastases (Tiegel) This is due to its ability to dissolve cholesterol and lipoids, which are encountered in tubercle bacilli and in tumor tissues When ether is heated to 60 C it yields a vapor with 1,722 mm Hg of pressure Before this is administered to the patient it is allowed to expand so that it becomes diluted and cooled to 40 C The body retains 75% of the inhaled ether, and 25% is eliminated by expiration The blood serum of patients with cancer absorbs 11 volumes of heated ether vapor while the serum of normal persons absorbs only 1 to 3 volumes The author administered inhalations of vapor of overheated ether to 43 men and women with very advanced cancer and metastasis He used Tiegel's technique with his own modifications Most of the patients were in a desperate condition and had failed to respond to x rays and radium The treatment has the following advantages 1 It is harmless Neither unpleasant effects nor secondary reactions were observed in more than 500 inhalations administered 2 In all patients the general condition of health and activity improved, vomiting, anorexia, the subjective symptoms, pain, and hemorrhages disappeared The patients gained an average of 5 5 kg in two months 3 The hemogram improved in some cases 4 Intestinal tumors became smaller or disappeared 5 Stenosis of the esophagus disappeared in 20 days in one patient, who had been able to drink only water and who is now able to eat all kinds of food No changes were noted in the metastases in the bones The author suggests further work on the effects of vapor of overheated ether and other anesthetics His article is a preliminary report

Schweizerische Zeitschrift fur Tuberkulose, Basel

8 159-224 (No 3) 1951 **Partial Index**

Pneumoperitoneum in Treatment of Pulmonary Tuberculosis S J Leitner —p 175
Combination of Intrapleural and Extrapleural Pneumothorax. L. Adelberger and H Blaha —p 193
*Extrapleural Pneumothorax Combined with Antibiotic Therapy in Pulmonary Tuberculosis with Cavity Formation E Herrmann.—p 205

Pneumothorax and Antibiotic Therapy.—This paper reports observations on 49 patients with cavernous pulmonary tuberculosis in whom extrapleural pneumothorax was induced in connection with antibiotic therapy During a preparatory period of at least two months, the patients were treated with paraaminosalicylic acid, and treatment with streptomycin was begun at least four to 10 days before the induction of pneumothorax and was continued during the pneumothorax treatment until the exudate had been absorbed Comparison of these 49 patients who received combined therapy with 49 who were treated with pneumothorax without the addition of antibiotics during the years between 1939 and 1943 revealed that it was possible to extend the indications for collapse therapy Other advantages were that the exudate disappeared rapidly, so that the formation of adhesions was prevented and the respiratory function of the noncollapsed portion of the lung was preserved, also, because the pneumothorax does not shrink much, it does not have to be very extensive and thus more of the respiratory surface is preserved. These factors lessen the technical difficulties and reduce the need for secondary plastic operations after the pneumothorax is terminated The fact that treatment with antibiotics prevents the formation of empyema is highly important, because the empyema not only exerts an unfavorable influence on the immunobiologic condition, but it also makes the pneumothorax rigid and ineffective The pneumothorax treatment is made simpler and less hazardous by the addition of antibiotics, because limitation of complications reduces the number of refills necessary

Tubercle, London

32 97-118 (May) 1951

Eosinophilic Lung L A. Westwood and S Levin.—p 98
Atelectasis in Pulmonary Tuberculosis M Farquharson —p 108
BCG Vaccination in Island of Timor V M. Oppers.—p 111

Ugeskrift for Laeger, Copenhagen

112 1311-1344 (Sept. 21) 1950 **Partial Index**

*Diverticulitis of Sigmoid Flexure and Perisigmoiditis Eighteen Cases Treated Operatively J J Jacobsen —p 1311
Operative Treatment of Chronic Hepatitis. J Ernst.—p 1317
*Clinical Observations on Craniotabes Material from Two Child Welfare Stations in Copenhagen. K. *Blom.—p 1326*
Treatment of Acute Barbiturate Intoxication J Røjel —p 1335

Diverticulitis of Sigmoid Flexure and Perisigmoiditis.—Jacobsen discusses 18 cases of complicated diverticulitis and perisigmoiditis treated operatively, in eight men and 10 women, aged 37 to 70 Localized peritonitis was present in one case, vesicocolic fistula in one, peridiverticulitis in two, large extraperitoneal abscesses in two, and stenosing perisigmoiditis in seven Of the eight postoperative deaths four were due to diffuse peritonitis and four to intoxication and poor general condition In addition to the danger of local complications in these cases the presence of an infectious focus in the organism involves the risk of septic complications The first step in the treatment of perisigmoiditis should usually be the formation of an artificial anus, further treatment depends on the complications In most cases there were multiple symptoms In perisigmoiditis differentiation from cancer of the colon is difficult. While roentgen examination affords valuable information, it rarely gives certain diagnosis Diverticulosis is not believed to predispose to cancer of the colon, but because of the frequency of the two affections they will occasionally occur together

Craniotabes.—Blom reports that of 662 children examined at two children's welfare stations 83 (12 6%) had craniotabes The results support the assumption that craniotabes is not of rachitic but is of physiological nature Prophylactic administration of cod liver oil to mothers and children did not prevent craniotabes but prevented rickets Craniotabes is thought to be an osteoporosis due to high growth intensity The parietal bones are most commonly affected, perhaps as the place of least resistance, since they are exposed for the longest time to the greatest intrauterine and postnatal pressure

Wiener medizinische Wochenschrift, Vienna

101 299 322 (April 28) 1951 **Partial Index**

*Clinical Results Technique and Pathological Anatomy of Procaine Hydrochloride Infiltration of Frontal Cerebral Lobe in Cancer Patients with Intractable Pain. F Mandl F Paul, W Gyri and R. Jelinek.—p 304
Atrophy of Neck of Femur A Saxl —p 308

Procaine Infiltration of Frontal Lobe for Relief of Intractable Pain.—Fourteen patients with carcinoma of the uterus, larynx, and rectum, and bronchial carcinoma submitted to procaine hydrochloride infiltration of the frontal cerebral lobe An injection of up to 15 cc of a 1% solution of procaine hydrochloride was made through a trephine opening in the sagittal plane from a point 3 cm in front of the coronal suture and 3 cm laterally from the midline toward the upper orbital vault In most of the patients intervention was performed on the ipsilateral side to the focus of pain Results were excellent or satisfactory in seven patients, encouraging in three, doubtful in one, and poor in three The complications sometimes following lobotomy did not occur in any of the patients Three patients who obtained only temporary relief from pain (partial results) required repeated infiltration, which was performed transcutaneously through the old trephine opening except for one patient in whom ossification of the old opening had occurred within five weeks Experiments on cadavers with a solution of methylene blue for infiltration of the frontal lobe showed that there was no discoloration of the adjacent portions of the brain The stain spread only over the convexity and over the base of the brain Additional experiments on cadavers demonstrated that infiltration with the described technique is not dangerous and that the injection needle is never in contact with the anterior horn of the lateral ventricle Necropsies performed on four patients demonstrated that the pressure of the injected solution produces a mechanically conditioned, hemorrhagic softening of the brain substance, the extent of which apparently varies with the amount of pressure applied It is suggested that the analgesic effect of the infiltration may be due to this destruction of the pathways in the frontal lobe and probably does not depend on the type of the anesthetic used

QUERIES AND MINOR NOTES

ADIE'S SYNDROME

To the Editor —*A woman, 43, an immigrant from Germany, was first seen Sept 2, 1950, complaining of increasing night blindness for two months without other ocular or systemic symptoms Past history revealed hypertension to 170 systolic, treated with pills in Germany, a tonsillectomy performed one year ago for recurrent 'sore throat" and one full term normal pregnancy The patient's weight is 143 lb (64 9 kg) and her blood pressure is 150/90, left arm, sitting The pupils are equal and react normally to light and accommodation The visual fields are normal by confrontation, the visual acuity is 20/20 bilaterally The fundi are normal Neurological examination is normal, except that knee and ankle jerks are absent The hemoglobin is 13 gm The blood smear is normal On Oct 21 the patient stated that friends had noted unequal pupils and that night blindness was unchanged The left pupil was found to be larger than the right and the left pupil had no direct or consensual reaction to light or to accommodation Results of a Kline blood test had been reported negative On Feb 17, 1951, a spinal puncture was done, revealing clear fluid, with one lymphocyte The fluid was Nonne negative, the total protein 32 mg per 100 cc, and the Wassermann and colloidal reactions negative Routine skull x rays, taken the same day, were normal This was considered to be a case of Adie's syndrome*

John T Harbaugh, M D, St Paul

Answer —The diagnosis of Adie's syndrome in this case is certainly correct The majority of affected persons are females who are apparently healthy otherwise. The onset is usually sudden, and the condition is permanent The size of the tonic pupil, however, varies from time to time and may even become smaller than its mate The tonic pupil is unilateral in 80% of cases and most often left sided, as in this patient Unlike the true Argyll Robertson pupil, the tonic pupil dilates normally with mydriatics (atropine, homatropine, cocaine) In 1940 Scheie introduced a specific test, the reliability of which has since been firmly established. The instillation of 2 5% methacholine produces a contraction of the tonic pupil, whereas the normal pupil is not affected by this concentration The hypersensitivity of the tonic pupil to cholinergic drugs apparently indicates that the lesion is in the ciliary ganglion or is peripheral thereto

Adie thought the affection was due to a disease of the vegetative nervous system Lowenstein and Friedman consider the malady a heredodegenerative disturbance affecting the vegetative centers of the diencephalon and their connections with the mesencephalon James ascribed the condition to general nervous asthenia Jeliffe observed a tonic pupil and areflexia (loss of knee and ankle jerks) in a woman with hypothyroidism, which responded to the administration of thyroid Kennedy showed that the syndrome may be associated with anxiety neurosis and that freedom from nervous tension in such instances resulted in improvement

In the case cited the therapeutic test indicated that the night blindness was not due to avitaminosis Night blindness due to vitamin A deficiency is usually observed in persons less than 20 years old and is extremely rare in this country Night vision is normally best if the refractive status is that of mild hyperopia The tonic pupil may be associated with tonic accommodation and consequent adventitious myopia Night blindness is frequent in all neurotic cases, especially anxiety neuroses, in which a reversion to the childhood fear of darkness evidently occurs In the recent war night blindness of this type assumed almost epidemic proportions in the combatant armies

PUPILLARY INEQUALITY

To the Editor —*A 7 year old girl, under treatment for migraine which centered around the right eye was referred to me because of a dilated right pupil which reacts minimally to light and has apparently normal accommodation Vision is 20/20 with or without a minimal hyperopic astigmatic correction There was no apparent change in the right pupil before or after cycloplegic examination The Wassermann reaction, sedimentation rate, results of neurologic examination, and routine skull x-rays were normal There is no history of trauma The child is apparently normal except for this dilated right pupil Does Adie s syndrome occur in children? Would a vascular entity cause more symptoms?*

M D, Minnesota

Answer —Adie's syndrome has been observed in a child 5 years of age, in whom pupillary inequality was observed at 6 months The syndrome is characterized by unilateral enlargement of the pupil with the direct and indirect light reflex almost completely abolished The pupil further dilates in the dark and slowly contracts in a brightly illuminated room During accommodation-convergence after a delay which may be as long as five minutes, the abnormal pupil slowly contracts until it may be smaller than the fellow pupil There may be an associated loss of tendon reflexes The tonic pupil contracts with 2 5% methacholine, which does not affect the normal pupil in this concentration

Analysis of the cause of the pupillary dilation in this patient requires the following additional information (1) length of time condition has been present, (2) nature of the migraine, (3) range of accommodation in each eye, (4) direct and indirect light reflex of both eyes, (5) fields of vision, and (6) pharmacologic response of the pupils The following conditions are suggested (1) Adie's syndrome, (2) ophthalmoplegia interna, (3) paralytic mydriasis, (4) congenital mydriasis, and (5) adrenergic nerve irritation

An excellent review of the pupillary reflexes and their abnormalities is contained in the work by Walsh (Clinical Neuro-Ophthalmology, Baltimore, Williams & Wilkins Company, 1947)

IMPAIRED HEARING

To the Editor —*One of my ears has incurable nerve deafness Every winter my other ear becomes affected with eustachian closure, with resulting partial deafness This clears up within a month or so, and hearing improves I have had four treatments with radon applicators over the fossae of Rosenmueller (three years ago) with great relief The attacks now last longer and are not so amenable to treatment I have desensitized myself with graduated histamine injections and recently seemed to be helped with 100 mg of cortisone in tablet form for two days What is the present accepted treatment in this disturbing condition? What is the prognosis? What climate is most favorable in prevention of the annual recurrence of this apparently seasonal (damp weather) condition?*

M.D New York

Answer —Impaired hearing due to eustachian tube closure may be caused by hypertrophied adenoidal tissue around the tubal orifice, by an allergy, particularly to house dust, by neoplasm in the nasopharynx (usually carcinoma), and by temporomandibular joint malocclusion as a result of replacement of the molar teeth with dentures that do not give the proper support to the bite

The treatment of eustachian tube occlusion is removal of the causative factor, if possible, and inflation of the eustachian tubes If there is an accumulation of serum in the middle ear, paracentesis followed by inflation may be indicated In this case, an allergy to house dust would seem possible, in which case desensitization with minute dosage therapy, as described by Hansel

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The answers here published have been prepared by competent authorities They do not, however represent the opinions of any official bodies unless specifically stated in the reply Anonymous communications and queries on postal cards cannot be answered Every letter must contain the writer s name and address but these will be omitted on request.

would be worth trying. In cases of allergy to house dust, the best climate is one with warm, clean air, best found in southern Florida or the Caribbean Islands rather than in New Mexico or Arizona, where there is much dust.

The prognosis is generally good, although rare cases may be very resistant to treatment. As a rule, the hearing can be restored to normal by establishment of normal ventilation of the eustachian tube. Rarely, in long standing cases, permanent adhesive changes in the middle ear develop, with a permanent hearing impairment.

TESTS FOR CORONARY INSUFFICIENCY

To the Editor:—*I would greatly appreciate it if you would have several competent authorities discuss the relative merits of the Levy test and the Master test, which are used in the detection of coronary insufficiency in patients whose histories are not definite enough to make such a diagnosis from their symptoms. I would appreciate a discussion of the use of these tests in the detection of "latent" coronary insufficiency in patients who give no history suggesting coronary insufficiency but in whom it is desired to ascertain an accurate picture of their coronary function prior to their undergoing strenuous physical effort.*

M.D., Washington.

Answer.—The anoxemia (Levy) and exercise tolerance (Master) tests are used to induce a relative lack of oxygen supply to the myocardium. The former does so by producing hypoxemia secondary to inhalation of a low oxygen gas mixture; the latter increases the work of the heart and thus, in conditions where coronary blood flow cannot be increased sufficiently, leads to relative coronary insufficiency and hence a decreased oxygen supply to the heart. Since both tests utimately evaluate the same functional deficiency and vary only in the manner of its production, many of their indications, merits, and demerits are the same. Both tests should be conducted only by well qualified physicians, because of the inherent danger of producing arrhythmias and even myocardial infarction. The anoxemia test requires special, although relatively simple equipment, while the two step exercise tolerance test requires only a wooden step. The anoxemia test has the advantage of immediately providing 100% oxygen inhalation, if necessary, while the exercise, once performed, may continue to increase the work of the heart even when the exercise is stopped. On the other hand, the exercise tolerance test simulates the type of strain on the heart that so often produces the symptoms in the patient. From wide experience in the past, the exercise tolerance test is well standardized in terms of the number of steps to be taken and of electrocardiograms that are considered "positive." It is the opinion of many physicians who have used both that the anoxemia test is more dangerous and also less comfortable for the patient.

Even without previous symptoms, these tests may show abnormal results in a given patient. Such results should certainly be taken as a warning against strenuous physical effort. However, the normal response to either of these tests should not per se exclude the possibility of coronary insufficiency, and the patient's condition as a whole must be considered. "False negatives" certainly occur, even in patients with proved coronary disease. "False positive" tests, such as are reported in anxiety states, are rare.

ACID SALTS AND EDEMA

To the Editor:—*A hypertensive patient has had a coronary and recurrent decompensation. It has been necessary to give mersalyl (salyrgan®) intravenously almost daily to keep ahead of his edema. In desperation the family tried a home remedy of boric acid crystals and cream of tarter mixed with water and taken by mouth. Surprisingly this concoction has kept the patient free from edema for two weeks. I am curious to know whether there is any scientific background for such therapy.*

Archie S. Narotzky, M.D., Ishpeming, Mich.

Answer.—Acid salts have been used for years in the treatment of nephrotic edema. It may well be that boric acid crystals and potassium acid tartrate have a diuretic effect, due not only to their acid properties but also to the potassium. Ever since Bunge's original work in the last part of the 19th century, which showed the antagonism between the retention of sodium and potassium, potassium has been used in the therapy of patients with edema. Without the dosage of either the boric acid or cream of tartar being specified, comment on the advisability of the therapy used is difficult. Serious poisoning can result from the ingestion of 5 gm. of boric acid. The toxic effects include nausea, vomiting, abdominal pain, diarrhea, visual disturbances, renal injury, collapse, and, occasionally, death. Its use in a chronic condition would appear to involve considerable risk. Tartrates are poorly absorbed from the gastrointestinal tract and are therefore sometimes employed as cathartic. If tartrates are absorbed into the circulation, they may produce renal damage. Cream of tartar, therefore, in the treatment of a chronic renal condition would also appear to involve considerable risk. It seems pertinent to remark that injury to the kidneys of an edematous nephrotic patient may result in a diuresis, with the impression of improvement in the renal disease though the apparent beneficial effect is the result of accentuation of renal disability.

DAMAGE CAUSED BY BORON COMPOUNDS

To the Editor:—*Can either allergic rhinitis or dermatitis of the face be produced in industry where both boric acid and borax particles fill the air?* *M. H. Brodkey, M.D., Omaha.*

Answer.—Repeatedly since 1881, boron compounds have been reported as causative of both surface and systemic damage. Injury has followed ingestion, hypodermic injection, enemas, pleural lavage, ointment application and industrial exposure. Hypersusceptibility is the rule, but susceptibility did not enter as a factor in a series of fatal cases in which boric acid solution accidentally was substituted for water in nipple bottles for infants. Exposure may be acute or chronic, and the consequences likewise may be acute or chronic. Currently the commonest lesion is that of eczematous dermatitis, with the chief location about the face. Present day concepts of sensitization imply that almost any agent capable of producing a surface lesion may, through tissue damage, create a specific allergy. On this basis a boron induced allergy becomes tenable, but this is not the usual form of damage.

TINNITUS

To the Editor:—*In 1949, while flying with a mild head cold, I contracted aero-otitis; ever since I have had a soft humming sound in both my ears and at times a feeling of fulness. Six months later, I had some x ray treatment to both ears involving 40 r on three or four occasions, in an attempt to shrink the lymph nodes in the posterior pharynx. This did not help. I then had a complete physical examination with no pathological findings; my hearing was perfect. I have noticed that my ear condition definitely depends on humidity changes; during dry days I am about free of humming sounds and fulness. I shall appreciate greatly information on treatment. I am 40 years of age.*

M.D., Indiana.

Answer.—Tinnitus is a symptom of various types of middle and inner ear pathology. When there is a reversible condition, such as aero-otitis, suppurative otitis media, or perforated tympanic membrane, the tinnitus is frequently relieved by relieving the underlying condition. More often there is no reversible pathology in the inner or middle ear, and in these cases there is no effective treatment for tinnitus. Since, in your case, the aero-otitis has long since cleared up, the tinnitus would fall into the latter classification.

THIAMINE INJECTIONS FOR FIVE YEARS

To the Editor:—*For five years a bank executive has had three or four hypodermic injections weekly of thiamine hydrochloride in 100 mg. doses without any apparent detrimental reactions. He claims it energizes him. Is there any danger in the continuous use of this vitamin?* *M.D., New York.*

Answer.—Thiamine hydrochloride is believed to have no toxic effects. The requirement for the average person is small, perhaps less than 2 mg. daily. When needed, however, this vitamin is given in much larger amounts, often 100 mg. or more daily. As much as 25,000 times the actual requirement has been given without harmful effect. The amount taken by this patient, 100 mg. four times weekly could apparently have no harmful effect. However, one wonders about the continuance of this procedure for five years. There is a psychological element here that cannot be ignored. Why not advise him to get his vitamins from food?

NICOTINAMIDE

To the Editor.—*Why does nicotinamide relieve certain cases of vertigo? Has nicotinamide ever been reported to produce undesirable symptoms in heavy doses? Would 200 mg. four times daily be considered an overdose? Could 400 mg. daily by mouth for three weeks produce precordial pain and constriction referred to the left side of the back?*

M.D., New Jersey.

Answer.—Vertigo may be one of the symptoms of pellagra, and in such cases the administration of nicotinamide would be of help. "Undesirable symptoms" have not been reported as resulting from reasonably heavy doses of this substance. A dose of 500 mg. each 24 hours is regarded as a good average amount, but 1 gm. daily has been given over a period of several weeks without injurious effects. The substance is usually well borne. There appear to be no reports of intolerance to its continued administration which would produce "precordial pain and constriction referred to the left side of the back."

PSORIASIS IN A VIOLINIST

To the Editor.—*A male violinist, 25, wishes to study the instrument in order to play it professionally. He has a patch of psoriasis on an elbow, two on the occiput, and has slight psoriatic involvement of three nails of each hand. His mother has psoriasis, but there is no family history of rheumatoid or psoriatic arthritis. He states that if arthritis is likely to develop in the ratio of 1 to 5 he will discontinue his study now rather than gamble on being disabled later after years of working toward eminence. What is the incidence of psoriatic arthritis in the finger joints of persons who have psoriasis of the nails?*

M.D., California.

Answer.—Both psoriasis and arthritis are common diseases. For one to determine the relative incidence of psoriatic arthritis as compared to other types of arthritis, a long term study of innumerable patients with both diseases would be required. Then, too, the clinical course of psoriasis is unpredictable. Fortunately, in most cases, the psoriasis constitutes little more than a cosmetic problem. There seems to be no reason to suspect arthritis of the finger joints to develop oftener in persons with psoriasis of the nails. If this young man has unusual talent and a great desire to become an eminent violinist, he should be encouraged to continue his studies.

NEPHROTIC SYNDROME

To the Editor.—*A 44 year old white woman has acute glomerular nephritis of two months' duration, which has now entered a nephrotic stage with reversal of the albumin globulin ratio, constant albuminuria (4 plus) and moderate edema which cleared with bed rest and salt free diet. Is the use of pituitary adrenocorticotropic hormone (ACTH) or cortisone indicated?*

John M. Butcher, M.D., Sarasota, Fla.

Answer.—The place that cortisone and pituitary adrenocorticotropic hormone will finally occupy in the treatment of acute glomerulonephritis or the nephrotic syndrome has not yet been established. Some investigators report good results, whereas in other hands these hormones have resulted in definite metabolic changes without apparently influencing the course of the disease. Patients with the nephrotic syndrome who have apparently had good results have, in certain instances, subsequently had a recurrence of edema. If edema can be controlled by dietary and other established measures, then this would be preferable, as there is no evidence that these hormones remove the renal lesion.

BYSSINOSIS

To the Editor.—*I have an industrial case with a question of death being secondary to byssinosis. Can you give me any information regarding this?*

M.D., Michigan.

Answer.—Byssinosis, commonly called "mill fever," is a pulmonary infection of low severity arising among cotton mill workers, chiefly in Europe. This disease has been variously associated, as to cause, with bacterial and fungal infection, allergy, and the toxin of Aerobacter cloacae (Prausnitz, C.: Medical Research Council, Special Report Series, No. 212, His Majesty's Stationery Office, 1936. Bolen, H. L.: *J. Indust. Hyg. & Toxicol.* 25: 215 [June] 1943).

PSORIASIS

To the Editor.—*A young woman began taking capsules of undecylenic acid for psoriasis, and after two days, complained of a rash of fine small punctate erythematous macules and papules on the face, neck and forearms. The patient being of a nervous disposition, I advised discontinuance of the undecylenic acid, pending inquiry, and substituting tripelennamine hydrochloride locally and internally. 1. Can one expect that such rash would disappear along with the old psoriasis lesions if one disregards these new papules and continues the undecylenic acid treatment for psoriasis? 2. Does undecylenic acid aggravate or precipitate new lesions? These are too immature to identify as psoriasis. 3. Is ACTH or cortisone to be regarded as the best available treatment of psoriasis? 4. Has aureomycin caused an allergic rash?*

W. J. Wakefield, M.D., Vienna, Ill.

Answer.—Experience in a large series of patients shows that undecylenic acid has no value whatsoever in the treatment of psoriasis. In some patients the psoriasis apparently has been aggravated by the use of undecylenic acid. Pituitary adrenocorticotropic hormone (ACTH) or cortisone relieves the patient of the psoriasis temporarily, however, when the drug is discontinued the psoriasis recurs, sometimes more extensively than before treatment was started. Aureomycin has produced few cutaneous reactions.

CHLOROPHYLL

To the Editor.—*What is the scientific explanation for the use of chlorophyll as a deodorant when taken internally and when used in the form of an airwick for odors in a room?*

G. Horace Coshow, M.D., Carpinteria, Calif.

To the Editor.—*Is there any known harmful effect if chlorophyll is taken internally for purposes of deodorizing secretions or breath? Is there a maximum daily dosage? If there are any known harmful effects, what organs may be affected?*

W. F. Holmes, M.D., Walla Walla, Wash.

Answer.—Chlorophyll as it occurs in plants is unstable, and the commercial preparations used as deodorants are modified derivatives of the green coloring matter of plants. Studies by Moss, Morrow, Long and Ravdin (*J. A. M. A.* 140: 1336 [Aug. 27] 1949) have shown that a chlorophyll derivative will deodorize foul-smelling wounds. This action did not appear to be due to destruction of bacteria, since this chlorophyll preparation was not an efficient antiseptic. The apparent mechanism of action is probably one of adsorption or possibly oxidation or reduction of the odorous substances.

No satisfactory explanation has been offered for the deodorant effect of orally administered chlorophyll derivatives reported by Westcott (*New York State J. Med.* March 15, 1950). Kohler, Elvehjem and Hart (*J. Biol. Chem.* 128: 501 [May] 1939) reported that chlorophyll was not absorbed from the gastrointestinal tract, and there is no evidence available as yet that identifiable derivatives of chlorophyll are present in body fluids or in the urine after ingestion of chlorophyll.

It is generally believed that most body odor is due to bacterial decomposition of sebaceous secretions on the skin. There is no evidence that chlorophyll decreases this secretion or alters the bacterial flora of the skin. Furthermore, satisfactory control tests have not been made with chlorophyll taken internally as a deodorant, thus, not only is the mechanism of action unexplained, but it is not at all certain that the action exists except in the mind of the observer

There is no evidence that chlorophyll or the available derivatives have any harmful action Furthermore, it should be remembered that chlorophyll is a fairly constant constituent of a well balanced diet which includes green vegetables Finally, one should consider the fact that many herbivorous animals, including the goat, consume large quantities of chlorophyll, and some of these are noted for their pungent aroma

ALOPECIA UNIVERSALIS

To the Editor —*What treatment if any, is available for alopecia universalis? I have in mind a woman, 50, who suddenly lost all the hair on her body, probably from a severe mental shock* *Edward B Tyson, M D , Ocean City, N J*

Answer —The treatment of alopecia universalis is altogether unsatisfactory One occasionally observes some spontaneous regrowth of hairs, and at times one hears of an encouraging result from the use of hormone therapy In general, however, the cause is obscure and treatment meets with failure

PREGNANCY FOLLOWING ILEOSTOMY

To the Editor —*A woman, 27, has one living child, 5 years Since the birth of this child, the patient has had a permanent ileostomy, because of colitis with a complete colectomy She is desirous of becoming pregnant again Would there be any danger in any way if she becomes pregnant?*

Nerio W Pioppi, M D , Southbridge, Mass

Answer —This patient may safely become pregnant and be permitted to have a vaginal delivery A case report entitled ' Successful Pregnancy Following Ileostomy with Partial Colectomy for Ulcerative Colitis" was published by Kenneth W Warren in the *Lahey Clinic Bulletin* (5 202 [Jan] 1948)

THE OSCILLOMETER AND SKIN TEMPERATURE MEASUREMENTS

To the Editor —*What errors are associated with the use of an oscillometer, and how accurate is this machine in detecting suspected peripheral arterial disease? Are fewer errors apt to be associated with skin temperature measurements?*

Paul Russell, M D , Inglewood, Calif

Answer —Assuming that the oscillometer is mechanically correct, it registers occlusion or loss of elasticity in the pulsatile part of the peripheral arterial tree, the height and the shape of the oscillometric curve, together with the visible thrust or wormlike movement of the needle, permit a great many conclusions by an experienced observer, especially if differences are detected at symmetrical levels of the two extremities The instrument does not detect any changes in digital circulation or disturbances in arteriolar flow Skin temperature measurements, in the absence of a room with controlled temperature and humidity, can have only comparative value when one symmetrical area is tested against the other or when the effects of release of vasomotor tone is studied

DWARFISM

To the Editor —*The answer to a query in the June 16, 1951, issue of* The Journal *did not fully explore the diagnostic possibilities in the case of an underdeveloped child with glycosuria, despite a normal blood sugar content, and albuminuria in the presence of an otherwise normal urine In the answer it was presumed that renal dwarfism existed However, a rare hereditary defect of the proximal tubules of the kidney has been described by Fanconi which could explain the findings noted in the above case In the Fanconi syndrome there is a defect in the phosphorylating mechanism with resultant inability to reabsorb glucose amino acids, and phosphate from the glomerular filtrate This leads to a loss of these substances in the urine and a negative nitrogen and phosphorus balance with consequent impaired growth underdeveloped musculature and osteoporosis Fractures can occur from minor trauma and prolonged fasting can produce hypoglycemic symptoms McCune and co-workers reviewed the literature of this disorder (Am J Dis Child* **65** *81, 1943)*

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PERSISTENT SALTY TASTE

To the Editor —*In* The Journal, *June 16, 1951 (page 689) Dr Robert A Marks asks for the cause of a persistent salty taste in the mouth of a 57 year old white man He stated that the symptoms started after teeth had been removed for pyorrhea,' and persisted after he was fitted with a full upper and lower denture The most likely cause was omitted in the answer A persistent salty taste in the mouth is caused by an antral-oral fistula until proved otherwise Such fistulas may be difficult to locate, as they are often in a tissue fold under the denture The salty taste is caused by the secretions of the maxillary sinus entering the oral cavity Before this man is sent to a neuropsychiatrist, as is suggested in the answer, he should be sent to a competent oral surgeon who could determine whether such an antral-oral fistula is present This is especially likely in this case because it occurred after the removal of teeth for pyorrhea' (a better term is periodontoclasia) It is also stated in the answer that there may be a ' lowered sensitivity to taste—especially if the palate is covered by a plate " There are no taste buds in the hard palate which is covered by a denture The answer to a query in* The Journal *of Sept 17, 1949 (page 237), regarding a salty, bitter taste also omitted the statement that salty taste is almost pathognomonic of an antral-oral fistula*

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IMMUNITY AGAINST DIPHTHERIA

To the Editor —*I am taking the liberty of writing an addendum to the reply to a query in* The Journal *on immunity against diphtheria (April 8, 1950, page 1115) While there is no doubt that toxoid is effective in stimulating the appearance of antitoxin in the blood, there is considerable evidence that this does not necessarily confer immunity There is far too much tendency to confuse antitoxin in the blood stream with immunity and to use the two terms interchangeably That antitoxin in the blood does not necessarily confer immunity is shown by the development of diphtheria in persons receiving antitoxin a short time before onset There are also several reports of diphtheria in many persons supposedly adequately immunized" (Schick negative) with toxoid (Merkel, A E An Outbreak of Diphtheria in Medford Oregon, 1949, Am J Pub Health* **41**.*522 1951) On the other hand, many normal adults (around 30%) give a positive reaction to the Schick test yet diphtheria is uncommon in adults even when they have been exposed to the disease (although there is some indication that the age distribution of the disease may be higher than formerly) Of much greater significance in immunity to diphtheria is ' tissue resistance, an allergy like, binding reactivity of tissues toward the diphtheria bacilli themselves This is very potent and is wholly independent of antitoxin (Frobisher M , Jr , and Parsons E I Studies on Type-Specific Immunization with Somatic Antigens of Corynebacterium Diphtheriae Am J Hyg* **52** *239, 1950)*

With respect to the query referred to above, I believe that the immunity to diphtheria that follows the natural disease is far more effective than that which follows injections of bacillus free toxoid because the patient develops tissue resistance as a result of contact with the bacilli, as well as antitoxin resulting from contact with toxin This is the reason that as pointed out in the previous reply to the query, Authentic second attacks of diphtheria are rare

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SURGERY OF THE ADRENALS

Charles Huggins, M D
and
Delbert M Bergenstal, M D , Chicago

The purposes of surgery of the human adrenal glands are to remove neoplasms of these structures or to abolish functional activities which are deleterious to the organism, both conditions may be coeval The principle of abolition of dangerous physiological functions of the adrenals, of course, is the opposite to stimulation of these glands by a corticotrophic agent, for example, corticotrophin (ACTH) There are several clear indications for the removal of nonneoplastic adrenals at present, no doubt more will be found, and the subject will assume greater importance Frequently disease conditions caused by adrenal hyperfunction or those mediated through normal activity of these glands can be cured or alleviated by surgical procedures, with impressive results

Adrenal surgery is now in a fast-moving evolutionary stage Recently there have been four major developments in this area These are (*a*) methods of maintenance of life in the absence of the adrenal glands or in adrenal insufficiency, (*b*) highly valuable diagnostic procedures for the assay of adrenal functions, (*c*) improved technical surgery of the adrenals, and (*d*) experimental production of adrenal cortical tumors

The present paper is a brief and necessarily incomplete survey of the indications for surgery of the adrenals and includes a statement of the technical aspects of the operation and the essential medical management thereafter

PATHOLOGICAL PHYSIOLOGY OF THE ADRENAL

During embryonic life mesodermal cells in the region of the wolffian body near the genital ridge grow out and encase cells of the sympathetic nervous system derived from ectoderm to form the adrenal cortex and medulla respectively Many of the medullary cells bind chromate ion strongly (chromaffin tissue) while others resemble sympathetic ganglion cells

The most striking clinical effects of medullary hyperfunction are sympathomimetic, chiefly vasopressor in type Two hormones, l-epinephrine and l-norepinephrine [1] have been isolated from the adrenal medulla and from pheochromocytomas [2] Both substances cause elevation of systolic blood pressure but differ in certain other respects In brief, the administration of l-epinephrine causes little change in diastolic pressure, a decreased peripheral resistance, increased cardiac output, and tachycardia, l-norepinephrine causes elevation of diastolic pressure, increased peripheral resistance, and usually bradycardia [3] Goldenberg [4] has postulated that the rather wide range of symptoms observed in patients with pheochromocytoma is explainable on the basis of the varying amounts of l-epinephrine and l-norepinephrine, respectively, secreted by the tumor

The normal adrenal cortex is rich in ascorbic acid and in lipids, including cholesterol and other steroids, of which many have been isolated Of greatest significance in cortical hyperfunction is the elaboration of androgens, estrogens, and corticoids, such as the 11-oxygenated steroids (cortisone, 17-hydroxycorticosterone) Significant amounts of compounds of these types have been found in extracts of the adrenal cortex or the urine of patients with cortical tumors Cortisone has some effect on nearly every tissue,[5] exerting strong effects on the metabolism of carbohydrate and protein, but it has much less influence on electrolyte and water balance [6]

From the Ben May Laboratory for Cancer Research and the Departments of Surgery and Medicine, the School of Medicine University of Chicago

Read in the General Scientific Meeting at the One Hundredth Annual Session of the American Medical Association Atlantic City N J June 12 1951

Original observations reported in this paper were supported by grants from the American Cancer Society *on recommendation of the Committee on* Growth of the National Research Council and the Damon Runyon Memorial Fund for Cancer Research

[1] von Euler U S A Specific Sympathomimetic Ergone in Adrenergic Nerve Fibers (Sympathin) *and Its Relation to* Adrenaline and Nor Adrenaline Acta physiol scandinav **12** 73 97 1946

[2] (*a*) Goldenberg, M Faber M Alston E J and Chargaff E C Evidence for the Occurrence of Nor Epinephrine in the Adrenal Medulla Science **109**: 534-535 1949 (*b*) Holton P Noradrenaline in Adrenal Medullary Tumours Nature, London **163** 217 (Feb 5) 1949

[3] (*a*) Barnett A J Blackett R R Depoorter A E Sanderson P H and Wilson G M The Action of Noradrenaline in Man and Its Relation to Pheochromocytoma and Hypertension Clin Sc **9**: 151 179 1950 Goldenberg Faber Alston and Chargaff [2a] (*b*) Goldenberg M Pines, K Baldwin E DeF Greene D G and Roh C E Hemodynamic Response of Man to Nor Epinephrine and Epinephrine and Its Relation to the Problem of Hypertension Am. J Med. **5**: 792-806 1948

[4] (*a*) Goldenberg M Adrenal Medullary Function Am J Med **10**: 627-641 1951 (*b*) Goldenberg and others [3b]

[5] Sprague, R. G Power M H and Mason, H L. Physiological Effects of Cortisone and Pituitary Adrenocorticotropic Hormone (ACTH) in Man J A M A **144**: 1341 1347 (Dec 16) 1950

[6] Ingle D J The Biologic Properties of Cortisone A Review J Clin Endocrinol **10**: 1312 1354 1950

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As Kenyon [7] has pointed out, certain signs and symptoms of adrenal tumors have been reproduced to some extent by the administration of pure steroids, (*a*) hypertension by desoxycorticosterone acetate (doca®), (*b*) sodium and water retention by desoxycorticosterone acetate and cortisone, (*c*) diabetes and nitrogen loss by cortisone, (*d*) nitrogen gain and somatic growth by testosterone, (*e*) masculinization and feminization (with depression of gonadal function) by androgens and estrogens respectively, and (*f*) atrophy of the adrenal cortex, contralateral to that involved by a neoplasm, by cortisone

It is unlikely that the endocrine effects induced by an adrenal cortical tumor are evoked by a single hormone or in many cases by a single class of endocrine compounds so that mixed clinical syndromes are encountered depending on the combinations of the various types of hormonal agents involved

ADRENAL CORTICAL TUMORS

Experimental Induction —Provided the hypophysis is present, the absence of gonadal hormones in certain species of animals results in hyperfunctioning cortical neoplasms The pituitary seems to be essential to any cortical hypertrophy [8] The brilliant discovery of Woolley and Little [9] elucidated a mechanism for inducing these tumors They employed the simple method of gonadectomy soon after birth in susceptible strains of mice, which resulted in the development of benign or malignant tumors, the incidence of tumors in the mice has been as high as 100%, and the tumors may involve one or both adrenal glands The tumors are preceded by hyperplasia of the cortex, they metastasize and are transplantable for many generations The neoplasms can produce androgenic or estrogenic hormones The tumors may be prevented by administration of estrogen [10] to the castrate mice, apparently as a result of pituitary inhibition Cortical adenomas also have been produced by the early castration of guinea pigs [11]

In humans with cortical tumors there is evidence of pituitary abnormalities Cushing [12] drew attention to the frequency of basophilic adenomas in the pituitary in certain states of human adrenal hyperfunction, however, it is now known that these adenomas are not prerequisite to the condition [13] Crooke [14] discovered that in the hyperadrenocorticism of Cushing's syndrome the pituitary basophils lose their granules and develop hyaline changes, these Crooke cells apparently are invariably present in adrenal tumors with corticoid effects [16]

Adrenal Tumors with Androgenic Effects —Virilism, or the adrenogenital syndrome, results from these benign or malignant tumors, which seem to occur exclusively in young persons Wilkins [16] collected from the literature 70 cases of adrenal tumors in childhood, 53 girls and 17 boys Thirty-one of the girls and 12 boys suffered from virilism Characteristic findings in virilism are an abnormally rapid rate of skeletal growth and dentition, strong and well-developed musculature, a deep voice, precocious development of pubic hair, and growth of the penis (clitoris) In adolescent girls amenorrhea develops

Chemical analysis of the urine has diagnostic significance in these cases Usually there is an increased excretion of 17-ketosteroids [17] The amount of androgens is often greatly increased, as indicated by comb-growth assay methods [18] The androgens dehydroisoandrosterone [19] and isoandrosterone [20] have been isolated from the urine in large amounts The estrogenic and gonadotrophic levels are not increased [18a]

Adrenal Tumors with Estrogenic Effects —Wilkins [16] found 12 cases of feminizing tumors in males in the literature up to 1948, all were between 26 and 44 yr, except 2 boys, aged 6 and 15 yr Most of the tumors are highly malignant neoplasms The most evident clinical findings are mammary hypertrophy and, in adults, gonadal atrophy with impotence A girl, aged 2 yr, had menstrual periods [21]

The urinary estrogens may be normal [16] or greatly increased in quantity The urinary estrogen in the case of Simpson and Joll [22] was estrone In a case studied by us there was a great increase of 17-ketosteroids in the urine, but the level of urinary estrogen was not abnormal (Fig 1)

Adrenal Tumors with Corticoid Effects —Albright [23] made the penetrating analysis ascribing the usual symptom complex in Cushing's syndrome to excessive production of corticoids (the "sugar hormone") that promote the conversion of protein into glucose (gluconeogenesis) and interfere with protein synthesis as an "anti-anabolic effect "

Adrenal tumors with Cushing's syndrome may be benign or malignant. They occur most commonly in young women [12], until 1939 only two occurrences had been reported in men [17a] There is characteristically a uniform clinical ensemble Fraser and others [17c] state "By Cushing's syndrome is meant a definite disease picture, the *most distinguishing* features of which are muscular weakness, atrophy of the skin, osteoporosis, hirsutism without other evidence of virilism, insulin-resistant diabetes, and amenorrhea or impotence " Striking features are the "moon" face, the "pig" eyes, the purplish cutaneous striae, and the "buffalo" type of obesity involving the head, neck, and trunk while sparing the extremities Polycythemia, leukopenia, and a decreased resistance to infection are common. Many patients have psychosis [24] Occasionally the syndrome is abnormal in that it is complicated by a strong androgenic component [25]

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[7] Kenyon A T Adrenal Cortical Tumors—Physiologic Considerations in Endocrinology of Neoplastic Diseases G H Twombley and G T Pack Editors New York Oxford University Press 245 290 1947

[8] Ball H A and Samuels L T Adrenal Weights in Tumor Bearing Rats Proc. Soc Exper Biol & Med **38**: 441-443 1938

[9] Woolley, G W and Little C. C The Incidence of Adrenal Cortical Carcinoma in Gonadectomized Female Mice of the Extreme Dilution Strain Observations on the Adrenal Cortex Cancer Res **5** 193 202 1945 The Incidence of Adrenal Cortical Carcinoma in Gonadectomized Male Mice of the Extreme Dilution Strain, ibid. **5**: 211 219 1945

[10] Woolley G W and Little C C Prevention of Adrenal Cortical Carcinoma by Diethylstilbestrol Proc Nat Acad. Sc **32** 239 240 1946

[11] Spiegel A Über das Auftreten von Geschwülsten der Nebennierenrinde *mit vermännlichender Wirkung bei frühkastrierten Meerschweinchenmännchen* Virchows Arch. path Anat **305** 367-393 1939

[12] Cushing H The Basophil Adenomas of the Pituitary Body and Their Clinical Manifestations (Pituitary Basophilism) Bull. Johns Hopkins Hosp **50** 137 195 1932.

[13] Walters W Wilder R M and Kepler E. J The Suprarenal Cortical Syndrome with Presentation of 10 Cases Ann Surg **100** 670-688 1934

[14] Crooke A C. A Change in the Basophil Cells of the Pituitary Gland Common to Conditions Which Exhibit the Syndrome Attributed to Basophil Adenoma, J Path & Bact. **41** 339 349 1935

[15] Thompson K W and Eisenhardt L Further Consideration of the Cushing Syndrome J Clin Endocrinol **3** 445-452, 1943

[16] Wilkins L Feminizing Adrenal Tumor Causing Gynecomastia in a Boy *of* Five Years Constrasted with a Virilizing Tumor in a 5-Year-Old Girl Classification of 70 Cases of Adrenal Tumor in Children According to Their Hormonal Manifestations and a Review of 11 Cases of Feminizing Adrenal Tumor in Adults, J Clin. Endocrinol **8**: 111 132, 1948

[17] (*a*) Crooke, A C and Callow R. K. The Differential Diagnosis of Forms of Basophilism (Cushing's *Syndrome) Particularly by the* Estimation of Urinary Androgens Quart. J Med. **8** 233 249 1939 (*b*) Wilkins [16] (*c*) Fraser R W Forbes A P Albright, F Sulkowitch H and Reifenstein, E. C. *Colorimetric Assay of* 17 Ketosteroids in Urine Survey of Use of This Test in Endocrine Investigation Diagnosis and Therapy J Clin Endocrinol **1**: 234-256 1941

In the urine markedly increased values of 17-ketosteroids are often encountered [26] and androgens likewise, as determined by growth of the combs of capons [18a] A great variety of classes of steroids has been isolated from the urine of a single patient [27] Appreciable quantities of 17-hydroxycorticosterone were isolated by Mason and Sprague,[28] which supports the postulate of Albright that corticoids are involved significantly in the pathogenesis of the disease Frank [29] discovered extremely large quantities of estrogen, unaccompanied by an increase of gonadotrophin, in the urine of four patients with Cushing's syndrome caused by cortical cancer

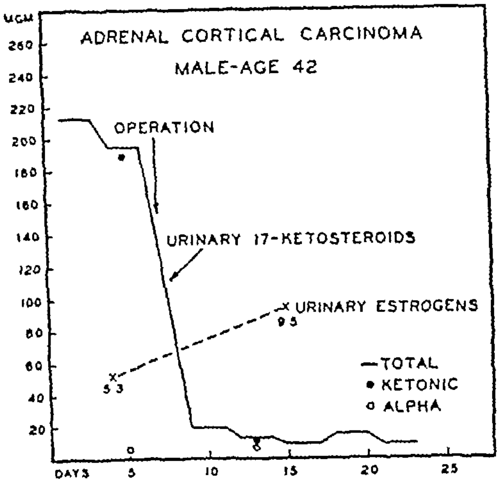

Fig 1—Daily excretion of 17 ketosteroids and estrogen in the urine of a male with a feminizing adrenal cortical carcinoma The assays were made by Dr William W Scott

The Cushing syndrome is not only produced by neoplasms but often results from bilateral adrenal hyperplasia There is no certain method for differentiating between these conditions unless a tumor can be palpated or visualized by radiography The presence of the characteristic symptom complex, in any event, is an indication for surgical exploration of the adrenals

The results of operation in Cushing's syndrome are usually excellent,[24a] as in the first case in which operation was successfully performed by Collett.[30] After successful surgical treatment the abnormal hair falls out within a few days, the hypertension rapidly recedes (Fig 2), and usually all symptoms and signs soon disappear

ADRENAL MEDULLARY TUMORS

Sympathetic Ganglion Tumors—These tumors are often malignant, especially in childhood,[31] and metastasize early They are frequently discovered only when a nontender abdominal mass is observed The treatment by surgery and irradiation is generally unsatisfactory

Pheochromocytoma—On analysis the l-norepinephrine content of these tumors has ranged from 0 95 mg to 6 96 mg per gram,[32] while the content of l-epinephrine varied from 0 03 to 6 5 mg per gram

The symptoms usually seen are those of either paroxysmal or persistent hypertension, the former syndrome being more frequently recognized The attacks may be frequent or widely spaced In a paroxysm the patient usually complains of precordial discomfort, palpitation, sweating, excitement, weakness, headache, labored breathing, and choking Often the patients are incapacitated The blood pressure is extremely high during the paroxysm

The diagnosis of pheochromocytoma, as with all disease, is dependent on the physician's awareness of the symptom complex, commonly there is an absence of symptoms and signs at the time of examination A tumor may be palpable, and sometimes during palpation of it an attack can be elicited Detection of hypertension during an attack is important for diagnosis The physician should be aware that chronic hypertension may be caused by a pheochromocytoma

Certain tests of diagnostic value have been described recently (*a*) The adrenergic-blocking agent piperoxan (2-[1-piperidylmethyl]1,4-benzodioxan) causes a considerable decrease in systolic and diastolic blood pressure after intravenous administration [33] (*b*) In certain cases in which a patient with pheochromocytoma is in a normotensive phase, the injection of 25 γ of histamine base results in a striking hypertensive response [34]

The first successful operation for pheochromocytoma was performed by C H Mayo,[35] and the first patient in whom the diagnosis was correctly made before exploration was operated upon by Shipley [36] After removal of these tumors the patient usually obtains immediate and permanent relief

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18 (*a*) Kenyon, A. T, Gallagher T F Peterson, D H Dorfman R I and Koch F C. The Urinary Excretion of Androgenic and Estrogenic Substances in Certain Endocrine States *Studies in Hypogonadism* Gynecomastia, and Virilism J Clin Invest **16**: 705 717, 1937 (*b*) Crooke and Callow [17a]

19 Callow R. K. Isolation of the Male Hormone Present in the Urine of a Patient with an Adrenal Tumor *Chem and Ind* **55**: 1030 1936 Crooke and Callow [17a]

20 Butler G C and Marrian G F Chemical Studies on the Adreno Genital Syndrome The Isolation of 3(α-hydroxyethiocholane 17-one 3(β)-hydroxyetioallocholane-17-one (*Isoandrosterone) and a New Triol* from the Urine of a Woman with Adrenal Hyperplasia J Biol Chem **124** 237 247 1938

21 Walters W and Kepler E. J Surgical Lesions of the Adrenal Glands J A. M A **111** 1061 1065 (*Sept. 17*) 1938

22 Simpson S L. and Joll C A Feminization in a Male Adult with Carcinoma of the Adrenal Cortex Endocrinology **22** 595-604 1938

23 Albright F Cushing s Syndrome Its Pathological Physiology Its Relationship to the Adreno-Genital *Syndrome, and Its Connection* with the Problem of the Reaction of the Body to Injurious Agents (Alarm Reaction of Selye) The Harvey Lectures (1942 1943) Harvey Lect **38** 123 186 1942 1943

24 (*a*) Holmes G Virilism *Associated with a Suprarenal Tumour* Recovery after its Removal Quart J Med **18**: 143-152 1925 (*b*) Allen C. in collaboration with Broster L R Vines H W C Patterson J Greenwood A W Marrian G F and Butler G C Paranoid Psychosis with Adrenogenital Virilism Successfully Treated by Adrenalectomy Brit. M J **1** 1220-1224 1939 Broster L. R and Allen C Further Case of Paranoid Psychosis Successfully Treated by Adrenalectomy Brit. M J **1**: 696-698 1945

25 Friedgood H B and Gargill C. L. Biochemical and Chemical Studies of Virilism Before and After Removal of Adrenal Cortical Tumor J Clin. Invest. **17**: 504 1938

26 Crooke and Callow [17a] Fraser and others [17c] Friedgood and Gargill [25]

27 Kepler E. J Sprague R. G Clagett, O T Power M H Mason H. L and Rogers H M Adrenal Cortical Tumor Associated with Cushing s Syndrome Report of a Case with Metabolic Studies and Remarks on the Pathogenesis of Cushing s *Syndrome J* Clin. Endocrinol **8** 499 531 1948

28 Mason H L. and Sprague R. G Isolation of 17 Hydroxycorticosterone from the Urine in a Case of Cushing s Syndrome Associated with Severe Diabetes *Mellitus J Biol* Chem. **176** 451-456 1948

SURGICAL TECHNIQUE

Denervation of the adrenals was extensively studied by Crile,[37] who reported improvement in patients with hyperthyroidism, peptic ulcer, diabetes mellitus, epilepsy, and other diseases, however, this procedure has been abandoned except as it is incident to thoracolumbar sympathectomy The only operations now carried out on the adrenal are the removal of tumors, partial resection of the gland, and complete removal of one or both adrenals

The technical problem in adrenal surgery is to secure adequate exposure, since these little glands are tucked high under the diaphragm All possible anatomic approaches seem to have been employed to circumvent that surgical obstacle—the bottom of the costal cage These incisions include the anterior abdominal incision, either longitudinal or transverse, the anterior subcostal [38], the lateral subcostal [39], the posterior vertical [40], the posterolateral,[41] and transthoracic [42]

We find that the posterolateral approach gives incomparably the best exposure The operation is done under spinal anesthesia The patient lies in the lateral position commonly employed in operations on the kidney, with the head and foot of the operating table lowered An incision 20 to 25 cm long is made in the loin over the 12th rib, which is resected, the fascia of Gerota is incised The upper pole of the kidney is the key to finding the adrenal The orange-yellow base of the adrenal is visualized, and the gland identified by palpation The right adrenal rides on the shoulder of the liver, while the left hugs the posterior peritoneum The adrenal glands are held in place by a number of fine strands of tissue, like guy wires, which are dissected under direct vision with scissors Usually none of these strands needs ligation except the principal adrenal vein, which is rather larger (about 4 mm in diameter) than the other suspending structures The vein is found on the anterior surface of the adrenal at the junction of the middle and lower thirds of the gland, where it may be readily identified by palpation, a hemostatic forceps is applied and the vessel is sectioned When hemostasis is secured by ligation and the gland has been excised, the wound is closed

In case of operation on both adrenals at the same sitting, we turn the patient on the opposite side, redrape him with sterile linen, and proceed as just described It is important in bilateral operations on the adrenals to administer fluids intravenously When the patient is obese, an incision is made over the internal saphenous vein at the ankle, and a cannula is inserted in this vein

MEDICAL MANAGEMENT INCIDENT TO ADRENAL SURGERY

In adrenal surgery we agree with Walters and Kepler [1] that "the most important factor in surgical therapy is the anticipation, prevention and control of postoperative adrenal cortical insufficiency " Remarkable advances have been made recently, so that the patient without adrenals can be supported in good health for long periods of time Until the last decade the mortality from extirpation of hyperfunctioning adrenal tumors was very high (30% as reported by Cecil [43] in 1933), especially in patients with Cushing's syndrome [15] and virilism [44] An atrophic adrenal usually exists contralateral to a cortical adrenal tumor In several cases [45] an adrenal gland could not be found at necropsy on the side opposite to that operated upon for cortical tumors

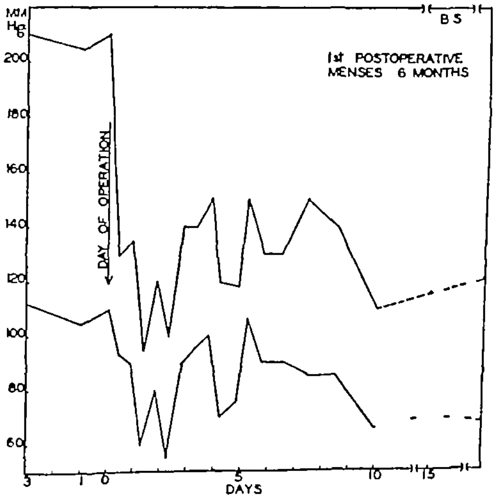

Fig 2.—Effect of removal of a benign adrenal tumor on the blood pressure of a woman with Cushing's syndrome

An improved understanding of the physiology of the human adrenal gland and the availability of steroid hormones, especially desoxycorticosterone acetate and cortisone, have revolutionized the management of patients after adrenal operations, where adrenal insufficiency is particularly dangerous to life From the practical standpoint insufficiency must be forestalled—it is rarely cured when it has developed immediately after operation It is a safe rule in any proposed extirpation of the adrenal to treat the patient in advance as if insufficiency were certain to develop postoperatively and to withdraw the essential medicines slowly, when possible, in the days after the operation

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29 Frank, R T A Suggested Test for Functional Cortical Adrenal Tumor Proc Soc Exper Biol & Med **31**: 1204-1206 1934 Frank R. T A Suggested Test for Cortical Adrenal Carcinoma J A M A. **109**: 1121 (Oct. 2) 1937

30 Collett A Genito-Suprarenal Syndrome (Suprarenal Virilism) in a Girl One and a Half Years Old with Successful Operation Am J Dis Child **27** 204-218 (March) 1924

31 Bailey P and Cushing H A Classification of the Tumors of the Glioma Group on a Histogenetic Basis with a Correlated Study of Prognosis Philadelphia J B Lippincott Company 1926

32. Holton [27b] Goldenberg [33]

33 Goldenberg M, Snyder C H and Aranow H Jr New Test for Hypertension due to Circulating Epinephrine J A M A **135** 971 976 (Dec 13) 1947 Goldenberg M and Aranow H Jr Diagnosis of Pheochromocytoma by the Adrenergic Blocking Action of Benzodioxan J A M A **143** 1139-1143 (July 29) 1950

34 Roth G M and Kvale W F A Tentative Test for Pheochromocytoma Am J M Sc. **210**: 653-660 (Nov) 1945 Shapiro A P Baker H. M Hoffman M S and Ferris E B Pharmacologic and Physiologic Studies of a Case of Pheochromocytoma Am J Med **10** 115 130 1951

35 Mayo C H Paroxysmal Hypertension with Tumor of the Retroperitoneal Nerve Report of Case J A M A **89** 1047 1050 (Sept 24) 1927

36 Shipley A M Paroxysmal Hypertension Associated with Tumor of the Suprarenal Ann. Surg **90** 742 749 1929

37 Crile G W Denervation of the Adrenal Glands for Neurocirculatory Asthenia Technique and Clinical Results Surg Gynec & Obst **54**: 294-298 1932 Crile G Indications For and End Results in 308 Denervations of the Adrenal Glands Am. J Surg **24** 378 385 1934

38 Cahill, G F Loeb R. F Kurzrok, R Stout A P and Smith F M Adrenal Cortical Tumors Surg Gynec & Obst **62**: 287 313 1936

39 Zintel H A Wolferth C. C Jeffers W A Hafkenschiel J H and Lukens F D W Ninety Five Per Cent Sub-Total Adrenalectomy for Essential Hypertension Surgical Forum Philadelphia W B Saunders Company 1951 pp 556-558

40 Young H. H A Technique for Simultaneous Exposure and Operation on the Adrenals Surg. Gynec & Obst **63** 179 188 1936 Crile [37]

The most critical test for postoperative therapy follows bilateral adrenalectomy, and a program of treatment has been devised so that this heroic ordeal may be endured with little danger By the use of this program bilateral adrenalectomy has been carried out consecutively in eight patients without fatality, and an addisonian crisis was not encountered The most important factors in prophylaxis of surgical adrenal insufficiency seem to be administration of adequate quantities of cortisone and desoxycorticosterone acetate (Table), replacement, by transfusion, of blood lost at operation, maintenance of systolic blood pressure, when levels below 100 mm of mercury are encountered, by slow intravenous injection of vasopressor substances, such as l-norepinephrine (10 γ of free base per 1 cc of 0 9% sodium chloride) We are of the opinion that the intravenous injection of massive amounts of fluid is harmful, the total amount of fluid injected during the first postoperative day should be small and perhaps should not exceed 1,500 cc Acetylsalicylic acid (0 6 gm by mouth) is given when the temperature is 38 C or higher We have not found it necessary to administer aqueous adrenal cortical extracts

Substitution Therapy for Total Adrenalectomy

0 Minus 1 Day		
Cortisone acetate *	50 mg	6 a m 12 noon 6 p m 12 midnight
Desoxycorticosterone acetate *	5 mg	6 a m
Sodium chloride *	5 gm	6 p m
0 Day (Day of Operation)		
Cortisone acetate	100 mg	7 a m
Desoxycorticosterone acetate	5 mg	7 a m
Operation †		8 a m
Cortisone acetate	50 mg	Every 4 hr
0 Plus 1 Day		
Cortisone acetate	50 mg	Every 6 hr
Desoxycorticosterone acetate	5 mg	1 injection
Sodium chloride	3 gm	by mouth
0 Plus 2 Days		
Cortisone acetate	50 mg	Every 12 hr
Desoxycorticosterone acetate	0-3 mg	As needed
Sodium chloride	3 gm	
Subsequent Days		

The dosage of steroids is gradually reduced until the sustaining dose of cortisone acetate (25 to 50 mg daily) is reached about one week after the operation desoxycorticosterone acetate is not required for maintenance therapy

* The cortisone acetate and desoxycorticosterone acetate were administered throughout by intramuscular injection and the sodium chloride by mouth

† Five hundred cubic centimeters of 0 9% sodium chloride and 500 cc of plasma are injected intravenously during operation and 10 γ of nor epinephrine per cubic centimeter is injected when systolic blood pressure falls below 100 mm

The maintenance dosage of cortisone acetate (37 5-50 mg per day by mouth) is usually instituted on the sixth postoperative day, it is not necessary to administer desoxycorticosterone acetate The patient supplements his diet by ingesting 2 to 4 gm of sodium chloride daily

REMOVAL OF NONNEOPLASTIC ADRENALS

Unilateral Adrenalectomy —The removal of one adrenal gland in the presence of its normally functioning mate in our experience and that of others [46] has not produced an appreciable functional or therapeutic effect We have performed this unilateral operation twice for essential hypertension and likewise for Cushing's syndrome without benefit to the patient Fontaine [47] has reported beneficial results following this procedure in five in a series of 11 patients with thromboangiitis

Bilateral Partial Adrenalectomy —Adrenal Hyperfunction After partial resection of both adrenals in two patients with virilism, Young [48] reported early improvement Recently, Priestley and co-workers [49] reported on their experiences with subtotal adrenalectomy in a series of 29 patients with Cushing's syndrome due to adrenal hyperplasia In 19 patients excellent remission from the disease was obtained

Hypertension There is considerable evidence implicating the adrenal glands in certain types of hypertension, for example, hypotension is a constant feature of Addison's disease, while certain adrenal tumors, both cortical and medullary, cause hypertension These and other considerations have led to attempts to modify chronic hypertension (not due to adrenal tumors) by adrenalectomy Neuhof [46a] observed a distinct reduction in blood pressure with relief of symptoms in 13 patients with very severe hypertension following bilateral partial adrenalectomy combined with sympathectomy Fontaine [47] employed the same procedures in 37 patients with persistent hypertension and stated that there were either good or excellent results in 20 patients Green and co-workers [50] removed about 97% of the adrenals of a woman with incapacitating hypertension and observed an arrest of the renal lesions with a striking regression of the cerebral, retinal, myocardial, and vascular disturbances Zintel and colleagues [46b] likewise have performed subtotal adrenalectomies in a series of patients with the severest grades of hypertension They concluded conservatively "In a limited follow-up period, it appears that subtotal adrenalectomy will produce some beneficial effects on the objective and subjective signs and symptoms as well as a variable reduction in the blood pressure of hypertensive patients "

Subtotal adrenalectomy at this time has pitfalls relating to the fragment of adrenal left Will the remnant survive at all, or will it hypertrophy and maintain the pristine disease? In the series of patients with Cushing's syndrome reported by Priestley and colleagues,[49] both difficulties were encountered In three of their patients

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41 Walters and Kepler [21] Holmes [44]

42. Broster L. R , Allen C Vines H. W C , Patterson J Greenwood A. W Marrian G F and Butler G C. The Adrenal Cortex and Intersexuality London Chapman & Hall Ltd 1938

43 Cecil H L. Hypertension Obesity Virilism and Pseudohermaphroditism as Caused by Suprarenal Tumors J A M A **100**: 463-466 (Feb 18) 1933

44 Reilly W A Lisser H and Hinman F Pseudo-sexual-precocity The Adrenal Cortical Syndrome in Preadolescent Girls Report of a Successfully Operated Case Endocrinology **24** 91 114 1939

45 Fordyce A D Evans, W H *Suprarenal Virilism with a Report of* Two Cases Pathological Notes Quart J Med **22**: 557 566 1929 Lukens F D W Flippin H F and Thigpen F M Adrenal Cortical Adenoma *with Absence of the Opposite Adrenal Report of a Case with Operation* and Autopsy Am J M Sc **193** 812-820 1937

46 (*a*) Neuhof H Gangliosympathectomy and Bilateral Hemiadrenalectomy for the Severest Grade of Hypertension Ann Surg **128** 787 790 1948 (*b*) Zintel H A Wolferth C C , Jeffers W A Hafkenschiel J H and Lukens F D W Subtotal Adrenalectomy in the Treatment of Patients with Severe Essential Hypertension Ann Surg to be published (*c*) Crile.[27] (*d*) Broster and others [42]

47 Fontaine R Frank P and Stoll G The Surgery of the Adrenals J internat chir **9**: 362 377 1949

48 Young H H The Abnormalities and Plastic Surgery of the Lower Urogenital Tract (Ramon Guiteras Lecture) J Urol **35** 417-480 1936

49 Priestley, J T Walters W Sprague R. G and Salassa R M A Clinical and Physiologic Study of Subtotal Adrenalectomy for Cushing s Syndrome (A Preliminary Report of 29 Cases) Ann Surg to be published

50 Green D M Nelson J N Dodds, G A., and Smalley R E Bilateral Adrenalectomy in Malignant Hypertension and Diabetes J A M A **144** 439-443 (Oct. 7) 1950

adrenal insufficiency developed, while in three others there was some recurrence of the Cushing syndrome

Bilateral Total Adrenalectomy — Hypertension Thorn, Harrison, and Criscitiello[51] reported on 12 patients with very severe hypertension with associated cardiovascular and renal disease Of these, eight patients have survived for a long enough period to evaluate the effect of the maintenance hormone therapy on the course of the disease Of these eight, four have shown great symptomatic relief with a significant reduction in blood pressure

Cancer The first successful total adrenalectomy in man was performed in this clinic[52] in 1945 for metastatic cancer of the prostate[53] in a man who was in a relapse after a remission induced by antiandrogenic control A retardation in the rate of growth of the neoplasm was observed in this patient, but adrenal insufficiency developed since cortisone and similarly active compounds were unavailable at that time Cox[54] performed subtotal adrenalectomy in a patient with paraplegia occurring from prostatic cancer, a brief remission resulted

With the availability of cortisone, the influence of the adrenals in men with widespread metastatic cancer of the prostate has been reinvestigated on an exploratory basis Recently two patients have been observed for very brief periods since operation, namely, for five and six months respectively Prior to bilateral adrenalectomy a remission occurred in both patients induced by the standard antiandrogenic measures of orchiectomy and the administration of estrogen Subsequently, each had suffered a relapse characterized by a general decline in weight and strength accompanied by great pain, which required sedatives many times daily, one patient was bedridden After adrenalectomy with maintenance cortisone therapy, a clinical remission occurred in each patient characterized by immediate and persistent loss of pain and a gain of more than 25 lb (11 3 kg) in weight Both of these patients have returned to work Despite the impressive nature of the clinical remissions, it should be emphasized that the number of cases is very small and the duration of observation since operation is exceedingly short.

SUMMARY

The removal of excessively functioning tumors of the adrenals leads to gratifying results The extirpation of nonmalignant adrenal glands is still in an exploratory phase Patient's with Cushing's disease due to adrenal hyperplasia and hypertension of certain types have been benefited Although the period of postoperative observation has been exceedingly brief, in two patients with very advanced cancer of the prostate a clinical remission of the disease occurred after adrenalectomy with maintenance cortisone therapy

It is true that, through science, it is now possible to anticipate or to overcome human adrenal insufficiency effectively by simple and relatively inexpensive methods However, very extensive or complete removal of adrenal tissue may lead to Addison's disease Before adrenalectomy is carried out, the physician is faced with a grave decision Do the chances of the therapeutic rewards counterbalance the certainty of long continued hormonal-replacement therapy and the constant danger of the development of Addison's disease? Adrenal surgery must never be embarked upon lightly

950 E 59th St

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[51] Thorn G W Harrison J H and Criscitiello M G Personal communication to the author

[52] Huggins C and Scott W W Bilateral Adrenalectomy in Prostatic Cancer Clinical Features and Urinary Excretion of 17 Ketosteroids and Estrogen Ann Surg **122** 1031 1041 1945

[53] The medical management in this patient[52] who survived nearly four months after the operation was due to Professor George W Thorn, who was the first to suggest a successful regimen by which man could be maintained postoperatively without adrenals and be free from addisonian crisis

[54] Cox, H. T Adrenalectomy and Prostatic Carcinoma Report of Three Cases Lancet 2 425-426 (Sept 20) 1947

RESULTS OF PROPYLTHIOURACIL THERAPY FOR HYPERTHYROIDISM

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and
V Sundgren, M D , Tulsa, Okla

This article is based on a study of patients treated for hyperthyroidism with propylthiouracil and is concerned chiefly with the ability of such treatment to produce remissions It also deals with certain advantages and disadvantages related to the over-all clinical handling of the disease by this method The final decision as to the permanency of remissions would imply following each patient throughout his life The patients discussed here have almost all been followed for 24 months or less

The patients studied started treatment between January, 1946, and April, 1947 A total of 179 such hyperthyroid patients were followed During the same interval of time, 71 additional patients were treated with propylthiouracil, but they could not be included in this survey for various reasons, they were patients who were undergoing trial therapy of arterial hypertension, patients with angina pectoris or congestive failure without hyperthyroidism, and patients who were observed only once and whose treatment was subsequently managed by the referring physician elsewhere

DOSE

Propylthiouracil was used in the beginning in doses now considered inadequate in most instances The dose varied considerably, but in almost all patients it eventually exceeded 200 mg and later 300 mg a day Two patients failed to respond to 400 mg per day

Early in our experience with propylthiouracil in the treatment of toxic diffuse goiter (Graves's disease) it was found that the vascularity of the thyroid commonly increased during therapy and that the accompanying thrill

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From Cleveland Clinic Hospital and the Frank E. Bunt Educational Institute

and bruit could be quickly eliminated by administration of 10 to 20 mg of iodine a day More recently iodine has been used concurrently throughout the entire period of propylthiouracil treatment

In some patients the basal metabolic rate tends to fall to abnormally low levels and clinical signs of hypothyroidism appear This should be avoided, since on theoretical and experimental grounds such a state would stimulate the production of pituitary thyrotropic hormone and thus stimulate the further enlargement of the existing goiter in clinical hyperthyroidism Such a state might increase the possibility of recrudescence of the hyperthyroidism after withdrawal of the antithyroid drug, although this has not been proved

In some patients the dose of antithyroid drug which gives complete control of hyperthyroidism and that which does not control differ by only a narrow margin If hypometabolism occurs, an increase in thyrotropic hormone production would be expected If the dose of antithyroid drug is decreased drastically early in treatment, recurrence of the hyperthyroidism would be likely To those patients whose basal metabolic rate falls below zero on relatively small amounts of propylthiouracil we have considered it prudent to give desiccated thyroid concurrently in sufficient doses to maintain a relatively euthyroid state without relaxing control of the overactivity of the gland For similar theoretical reasons it may prove good practice in the future to continue thyroid feeding for some time after propylthiouracil is withdrawn

Among the 179 patients treated for hyperthyroidism and adequately followed, there were two groups of 38 patients who could not be included in a survey calculated to establish the success or failure of this treatment as a curative measure In the first group (27 patients) the drug was used to control hyperthyroidism in preparation for surgery alone This use of propylthiouracil is eminently successful In the second group the curative effect of the treatment cannot be estimated because administration of the drug was never discontinued The chief reason for this was that these patients were considered unsuitable for surgery even though the hyperthyroidism was well controlled (Table 1) The drug was well tolerated, its use entailed little inconvenience, and, since we hesitated to risk exacerbation, administration of the medication was not stopped For three of these patients the drug was prescribed repeatedly elsewhere Treatment may be considered successful in this group from the standpoint of control of the hyperthyroidism

Although it was not the original intention to continue antithyroid medication indefinitely, long-continued administration of the drug in these cases demonstrates that it may be used in this way if circumstances warrant. Our present practice is to discontinue therapy after hypermetabolism has been completely controlled for about one year In the event of recurrence, radioactive iodine or surgery is prescribed

In 141 patients who have been followed, therapy was planned with the idea of producing a permanent remission after withdrawal of treatment In the majority of those who had Graves's disease, 10 to 20 mg of iodine was given daily, usually calcium iodostearate (stearodine*), 1 or 2 tablets a day, concurrently from the beginning of treatment It had previously been demonstrated that iodine in this dosage neither accelerates nor retards the effect of propylthiouracil in Graves's disease in any degree clinically important Whether or not it may have a bearing on the final remission rate following withdrawal of treatment is not known In Table 2 data are presented to show the results actually obtained

Among the patients in whom we failed to produce a remission are 18 in whom satisfactory control was never achieved for one reason or another, as indicated These 18 patients are included among those showing failure of control or relapse in most of the data which follow The reader should realize that these failures are, for the most part, not to be considered failures of the drug If we are willing to accept as a fact that at least 11 of these patients actually did have inadequate doses, then the figures could be handled in a different way In the future it might be assumed that approximately half of these patients would be in the remission group, thus changing the figures for all cases treated to 75 in remission and 66 as relapse or failure to control

TABLE 1 —*Associated Conditions Contraindicating Surgery in Hyperthyroidism*

Reason	Number of Cases
Congestive cardiac decompensation plus auricular fibrillation	2
Cardiac decompensation (rheumatic)	1
Angina pectoris	1
Postoperative tetany	1
Senility	1
Dwarfism and diabetes mellitus	1
Drug prescribed elsewhere	3
Condition not stated by patient or referring physician	1
Total	11

REMISSION

Remission, as we have referred to it in this paper, implies complete freedom from symptoms and signs of hyperthyroidism, and a basal metabolic rate of less than + 10% A patient was not considered as having experienced remission if symptoms persisted, especially if the basal metabolic rate was rising, even though it was not as high as + 10% In deciding which patients should be considered in remission, duration of administration of the drug was irrelevant, provided that complete control of the hyperthyroidism was obtained for even a short period of time It is quite possible that more prolonged use might have influenced results, even though a second or third trial of the drug had been made and might have

TABLE 2 —*Unsatisfactory Results of Concurrent Use of Iodine With Propylthiouracil in Graves's Disease*

Cause	Number of Patients	Dose Mg / Day	Comment
Failure of drug	2	400	Would higher dose levels have been effective?
Inadequate dose	2	50-75	One recurred after subsequent thyroidectomy
	5	200	
	4	300	
Toxicity preventing use	1		Leukopenia
	1		Dermatitis exfoliativa
Poor co-operation	3	Irregular use of drug	One patient subsequently controlled on 400 mg day methylthiouracil
Enlargement of the gland in 2			

been followed by remissions of three or more months' duration Relapses are recorded as such if one relapse occurred, whether or not good control was obtained later Relapse signifies a rise in basal metabolic rate to + 10% or above, with recurrence of symptoms of hyperthyroidism after the drug has been discontinued

Of the group of 141 patients in whom an attempt was made to induce permanent remission, regardless of the type of goiter (diffuse, nodular, or recurrent), there were 70 patients in remission and 71 in whom there was incomplete control, or relapse

TABLE 3 —*Response to Propylthiouracil Therapy in Relation to Sex*

	Female		Male		
	No	%	No	%	Total
Remission	46	44 7	24	63 2	70
Relapse or failure to control	57	55 3	14	36 8	71
Total	103		38		141

TABLE 4 —*Proportion of Nodular and Diffuse Goiters in Men and Women in 141 Patients*

	Female	Male
Nodular	41%	16 6%
Diffuse (Graves's disease)	59%	83 4%

In an attempt to obtain more authentic criteria in the selection of patients for propylthiouracil therapy, the patients were examined with regard to the separate factors described below

Sex —The therapeutic responses relative to sex are shown in Table 3

According to the figures in Table 3, remission rate is greater among men than among women More complete study of the data, however, indicates that sex is not the only factor of importance in producing this apparent effect It may be associated with the fact that nodular goiter is more prevalent in women, and such nodular goiters are less responsive to antithyroid drugs than are the diffuse goiters of Graves's disease The proportion of nodular and diffuse goiters in men and women in this group is shown in Table 4

TABLE 5 —*Age Distribution of Relapses and Remissions in 135 Cases of Hyperthyroidism**

Decade	Relapse and Failure to Control No of Cases	Remission Six Months or More	Remission Less Than Six Months
1	0	1	0
2	2	0	0
3	8	5	0
4	14	21	2
5	14	14	1
6	19	13	1
7	10	5	3
8	2	0	0

* The data were incomplete in six cases thus only 135 are described in this table

Age —The distribution of relapses or failures and remissions in relation to age is shown in Table 5

It is interesting to note from Table 5 that the failures are proportionately more common in patients over 50 years of age It is important to call attention to the fact that seven of the patients over 50 who failed to show remission on propylthiouracil medication had previous postoperative recurrences Only two such patients in this age group obtained remission Another factor influencing the relapse rate is the prevalence in the older age group of nodular goiter, which responds less favorably than diffuse goiter In short, age in itself does not appear to be a barrier to a good response to propylthiouracil

Initial Basal Metabolic Rate —Results of the separation of patients into two groups having basal metabolic rates of more or less than + 40% are shown in Table 6

If the patients are considered in two groups, one in which the metabolic rates were + 30% or less and one in which they were + 50% or more, the results are shown in Table 7

Thus our experience indicates that a patient with a high basal metabolic rate before treatment has a chance of permanent remission almost equally as good as that of a patient with mild hyperthyroidism

Duration of Control Maintained by Treatment —An attempt has been made to determine whether or not the long-continued control of hyperthyroidism under treatment materially influences the proportion of patients remaining in lasting remission after cessation of therapy

TABLE 6 —*Results in Patients With Basal Metabolic Rates of More or Less Than Plus 40 Per Cent*

Basal Metabolic Rate	Relapse or Failure to Control	Remissions
40% +	27	24
Less than 40%	37	35

TABLE 7 —*Results in Patients With Basal Metabolic Rates of Plus 30 Per Cent or Less and Plus 50 Per Cent or More*

Basal Metabolic Rate	Relapse or Failure to Control	Remissions
+ 50% and above	14	13
+ 30% and below	22	27

Our figures do not show that a maintained remission for 12 mo or more increases the length of post-treatment remission If the patients not completely controlled are excluded, we find that in the group controlled under therapy for less than 12 mo , remissions were 62%, and failures 38%, in those controlled for 12 mo or more remissions occurred in 61% and failures in 39%

Rate of Response —An early impression in this work indicated that patients who responded rapidly to treatment had a better chance to stay in lasting remission than those who responded slowly Further experience and careful consideration of the facts at hand have not sustained this theory For example, there were 12 patients in whom hyperthyroidism was not completely controlled until after four months of treatment, and who had recurrences within six months after cessation There were eight others who came under control equally as slowly, who remained in remission longer than six months after treatment was discontinued

Size of Goiter —The size of the goiter appears to bear some relation to the possible remission following treatment Of 71 relapses the approximate size of the gland was known in 56 patients Among these there were 44 glands of small and medium size Of 70 remissions there were 65 small and medium-sized glands This appears more significant in consideration of the fact that postoperative recurrences are represented mostly by small or medium-sized glands and in such recurrences propylthiouracil therapy is relatively unsuccessful

Type of Goiter—The type of goiter seems to have a distinct bearing on the result of therapy as outlined in Table 8

TABLE 8—*Relation of Type of Goiter to Propylthiouracil Therapy*

	Remission	Relapse or Failure to Control	Total
Diffuse (previously untreated)	47 (62%)	29 (38%)	76
Postoperative recurrent	8	18	26
Total diffuse glands	55	47	102
Nodular	12 (34%)	23 (66%)	35
Total	67*	70	137

* Note that the apparent discrepancy in the numbers 67 and 70 (70 and 71 elsewhere) is due to the fact that our data do not classify the type of goiter present in all patients

Period of Remission—The period of remission produced by propylthiouracil treatment is of prime interest in this problem Of our group of 141 patients treated definitively with propylthiouracil, 70 are known to be in remission The final duration of these remissions cannot be estimated accurately However, their present duration is shown in Table 9

TABLE 9—*Existing Remissions*

Known Duration	Number of Patients
Less than 6 mo	8
6-12 mo	31
13-24 mo	25
25 or more mo	6
	70

It is instructive to compare the figures in Table 9 with those representing the span of time in remission in patients in whom relapses were known to occur and in whom the time of relapse was known, as shown in Table 10

TABLE 10—*Duration of Remission in Patients Having Relapse*

Months in Remission	Number of Patients
1	12
2	7
3	6
4	3
5	0
6-11	5
12 and over	3
	36

The fact that the majority of such relapses occurred before the fifth month adds significance to the number of remissions lasting more than six months and especially to those in remission 12 mo or longer

In summarizing, the best results have been obtained in Graves's disease, excluding postoperative recurrences Failures are most frequent in patients with nodular goiter and in those with postoperative recurrences In the latter group almost all show diffuse glands of Graves's disease, a fact which is acknowledged, but the difference in results between this group and the previously untreated cases of diffuse goiter has appeared so striking that we have placed them in a separate category in relation to this type of treatment

RESPONSE OF IDEAL CANDIDATES TO PROPYLTHIOURACIL TREATMENT

In view of the previously mentioned findings it is interesting to determine the remission rate in a group of patients who were selected in retrospect as most likely to obtain permanent cure These results, we believe, indicate the probable prospects with such therapy in patients selected in a similar manner

The criteria for acceptance into this group were (1) the diagnosis of Graves's disease and (2) a small to moderate-sized goiter Those few patients with Graves's disease and large goiters, those with postoperative recurrences, and those with nodular goiters were excluded In addition, we might have accepted only persons in whom hyperthyroidism had been controlled for two months or longer However, since we have been unable to make a concise correlation between relapse rate and the duration of control, this time factor is not considered here There were 60 patients in this group Fourteen (23 3%) experienced relapses, and 46 (76 6%) are in remission

It is important to compare the rate of recurrence of hyperthyroidism after propylthiouracil therapy with recurrences following other types of treatment In Graves's disease the recurrence rate after thyroidectomy varies from 5%[1] to 18%[2] The latter figure is comparable with the average for the United States as a whole In addition, we have learned that recurrences of activity in Graves's disease are not unknown after control with radioactive iodine As of June, 1950, we had encountered four such patients known definitely to have had a relapse and two in whom relapse was strongly suspected On the latter two we have no data which proves complete control, although the patients were symptom free and had attained a normal weight before exacerbation was observed This represents a rate of recurrence in patients treated with I^{131} approximating 2%

The outstanding advantage of a cure following the use of an antithyroid drug lies in the fact that the thyroid remains intact and there is complete freedom from the risk of such complications as recurrent nerve injury, parathyroid tetany, and lasting hypothyroidism In short, a cure produced in this manner is the most physiological cure available

SUMMARY

Of 179 patients with hyperthyroidism followed after treatment with propylthiouracil, an attempt was made to produce a permanent remission in 141

In this group, regardless of type of goiter, adequacy of therapy or other influencing factors, 50% of the patients have remained in remission Existing remission has lasted for from two months to over two years Sixty-two of the 70 remissions have continued for more than six months Most relapses which occur are seen earlier than five months In patients in whom the time of relapse was accurately known, relapse occurred within four months in 28 of 36 cases

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[1] Bertelsen A, Christensen E Bruun E., and Becker-Christensen P Mortality Operative Complications and Recurrence Frequency in Surgical Treatment of Thyrotoxicosis Acta chir scandinav (supp 133) 96 3 1947

[2] Thompson W O Taylor S G., and Meyer K A Factors Influencing Operative Mortality in Exophthalmic Goiter Ann Int. Med 8 350 (Sept.) 1934

Age, sex, or severity of hyperthyroidism do not appear to be essential factors in influencing the chances of lasting remission The rate of response to a given dose of the drug and the duration of maintenance of control under therapy are not necessarily matters of importance in producing lasting remission The type of goiter, however, is important

Remission rate in Graves's disease in this series was 61 8%, and in nodular goiter only 34 2%

Patients who have had one or more relapses following surgery are unlikely to attain a permanent cure after withdrawal of propylthiouracil

In patients selected because of the presence of Graves's disease, small to moderate-sized goiters, and in whom complete control of hyperthyroidism had been maintained for more than two months, remissions were present in 76 6%

Important advantages of a lasting remission after propylthiouracil or methylthiouracil therapy are the presence of an intact thyroid gland and freedom from lasting complications such as hypothroidism, tetany or laryngeal paralysis

Propylthiouracil is distinctly beneficial, not only in preoperative preparation, but also in prolonged therapy for patients in whom surgical risk remains high, especially if radioactive iodine is not available

This drug is also valuable as definitive treatment in selected cases of hyperthyroidism, especially in Graves's disease

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COMPARISON OF AUREOMYCIN AND CHLORAMPHENICOL IN TREATMENT OF BACTERIAL PNEUMONIA

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Pneumococcic pneumonia has been found to respond to aureomycin therapy in a manner comparable to that observed with penicillin A rapid defervescence was noted in 31 of 33 patients treated by Gocke, Collins, and Finland,[1] and there were only two deaths, both occurring within 18 hr after starting therapy Dowling and others [2] reported a case fatality rate of 1 5% among 131 cases of pneumococcic pneumonia treated with aureomycin, as compared with a rate of 5 2% in 686 cases treated with penicillin

Much less is known concerning the effectiveness of chloramphenicol in the treatment of pneumococcic pneumonia This antibiotic has been reported by Bliss and Todd [3] to have little effect on the course of pneumococcic infections in mice In man, however, clinical studies in a small number of patients have yielded encouraging results [4]

The following study, carried out during the first six months of 1950, was undertaken to explore further the potentialities of these two antibiotics in the treatment of bacterial pneumonias occurring in adults A comparison was made between the results obtained with aureomycin and chloramphenicol In addition, the effectiveness of doses smaller than those usually employed was evaluated

METHOD OF STUDY AND CLINICAL MATERIAL

From Jan 1 to June 15, 1950, all adult patients admitted to the Infectious Disease Service of the King County Hospital with a diagnosis of pneumonia were treated with aureomycin or chloramphenicol [5] One hundred and twenty-one patients were so treated Of this total, 21 cases were discarded when review of the protocols revealed that they did not meet criteria for the diagnosis of early, untreated bacterial pneumonia, leaving a balance of 100 acceptable cases on which this report is based Diagnosis of the 21 unacceptable cases were as follows virus pneumonia, three, acute febrile infection, not pneumonia, six, intrathoracic neoplasm, three tuberculosis, two, cardiac failure with pulmonary infarction, two, bronchiectasis without definite pneumonia, one, pneumococcic pneumonia admitted following the crisis, one, extensive treatment prior to admission, two, and bleeding peptic ulcer with bronchopneumonia, one Of these 21 cases, four patients died, and all had postmortem examinations Causes of death in these four as determined at autopsy were hematogenous tuberculosis, rheumatic heart disease with pulmonary infarction, bleeding peptic ulcer with bronchopneumonia, and carcinoma of the trachea with metastases

Besides the routine laboratory studies, chest x-rays were taken, blood was drawn for culture, and a fresh sputum specimen was obtained prior to institution of therapy The sputum was examined by direct smear (Gram's stain), streaked on a blood agar plate, and a direct typing was attempted Sputum was also inoculated into mice, and typing was performed the following day from peritoneal washings [6] Organisms which could not be

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From the Department of Medicine University of Washington School of Medicine and the King County Hospital

[1] Gocke T M Collins H S and Finland M Aureomycin Treatment of Pneumococcic Pneumonia Arch Int. Med 84 857 (Dec) 1949

[2] Dowling H F, Lepper M H Hussey H H Caldwell E R and Spies H W The Treatment of Pneumococcic Pneumonia with Aureomycin, J Lab & Clin Med 35:215 1950

[3] Bliss E. A and Todd H P A Comparison of Eight Antibiotics in Vivo and in Vitro J Bact. 58 61 1949

[4] Hewitt W L and Williams B Chloromycetin (Chloramphenicol) in the Treatment of Infections New England J Med 242 119 1950 Recinos A Ross S Olshaker B and Twible, E. Chloromycetin in the Treatment of Pneumonia in Infants and Children New England J Med. 241:733 1949

[5] Lederle Laboratories Division, American Cyanamid Company Pearl River N Y supplied the aureomycin used *in this study* and Parke Davis & Co Detroit supplied the chloramphenicol.

[6] Dr Edward F Roberts of Wyeth Inc. Philadelphia, supplied the *pneumococcic typing serum*

typed, but which had appropriate morphological and cultural characteristics and were bile soluble, were considered to be pneumococci of higher types Acute and convalescent serums were obtained from most of the patients in whom the diagnosis of pneumococcic pneumonia was not definitely established, and were tested for cold agglutinins, Streptococcus MG agglutinins, and complement-fixing antibodies for psittacosis and Q fever[7] All pneumococci were tested for sensitivity to choramphenicol and aureomycin, using a tube dilution method Aureomycin serum levels were estimated in a number of patients, using the method of Dornbush and Pelcak.[8] A similar method was found to be satisfactory for determining chloramphenicol serum levels

The plan of treatment was to give aureomycin and chloramphenicol to alternate patients, administering 1 gm daily in a single dose For most of the study this policy was adhered to, but a number of exceptions occurred In spite of the failure to follow rigidly the proposed schedule, the two groups were quite similar in most respects, as indicated in Table 1 A close similarity was found in the temperature, white blood cell count, and severity of illness at the time of admission Patients treated with chloramphenicol fell into a somewhat older age group Preexisting disease was present in approximately half of the patients, and was well divided between the two groups The pneumonia was of five days' duration, on the average, when therapy was instituted

TABLE 1 —*Status of the Patients on Admission*

	Number of Patients	
	Aureomycin Group	Chloram phenicol Group
Total	50	50
Male	32	40
Female	18	10
Clinical condition		
Critically ill	9	7
Severely ill	29	23
Moderately ill	12	15
Preexisting disease		
Healed empyema	0	2
Bronchiectasis	5	9
Asthma	8	1
Tuberculosis active	1	1
Cardiac decompensation	0	3
Chronic alcoholism	4	5
Carcinoma of lung	1	2
Thrombophlebitis	1	0
Multiple sclerosis	1	0
Multiple myeloma	0	1
Cerebrovascular accident	8	0
Total	25	24
Age in years		
10-20	3	1
20-30	4	2
30-40	5	5
40-50	11	10
50-60	3	9
60-70	8	7
70-80	9	14
80-90	7	2
Average age	52 4	58 1
Temperature F (average)	102 6	101 6
White blood cell count (average)	16 000	15 400

A diagnosis of pneumococcic pneumonia was made in 76 of the 100 patients, and blood cultures were positive for pneumococci in 15 (20%) Types of pneumococci isolated from the sputum or blood in these cases are listed in Table 2, and susceptibilities of most of them to aureomycin and chloramphenicol are listed in Table 3 Of the 24 patients from whom pneumococci were not isolated, two had pneumonia caused by Friedlander's bacillus, two by Escherichia coli, and one by Hemophilus influenzae In the remaining 19 a diagnosis of bacterial pneumonia, etiology undetermined, was made These 19 patients had clinical findings compatible with pneumococcic pneumonia, but were not given this definitive diagnosis since pneumococci, or other predominating organisms, were not isolated from the sputum None had an initial elevation or comparative rise in titer of cold agglutinins, or of the other antibodies tested

TABLE 2 —*Types of Pneumococci Isolated from Seventy-Six Patients with Pneumococcic Pneumonia*

	Sputum		Blood	
Type	Aureomycin Group	Chloram phenicol Group	Aureomycin Group	Chloram phenicol Group
1	4	4	2	
2	2	4		1
3	4	1	1	
4	1	3	1	1
5		2		2
6	2	1		
7	1	3		2
8	4		1	
12	2	1	2	
18		3		1
19	3	1		
20	1		1	
22	1	2		
33	1	2		
10 29 34	3	3		
13 14	2			
15, 23 25		3		
Nontypable	5	7		
Total	36	40	8	7

RESULTS

The over-all results in the 100 patients treated are summarized in Table 4 For further analysis, the response to the two antibiotics will be considered separately

TABLE 3 —*Susceptibility of Pneumococci to Aureomycin and Chloramphenicol*

γ per cc.	Aureomycin	Chloram phenicol
0 011	1	0
0 022	1	1
0 045	3	1
0 09	9	1
0 19	24	1
0.39	10	8
0 78	3	10
1.56	4	12
3 12	4	26
6.25	0	0
12.5	0	1
Total Number of Strains Tested	65	65

TABLE 4 —*Results of Therapy in One Hundred Patients Treated*

	Aureomycin			Chloramphenicol		
	Pneumococcic Pneumonias	Other Bacterial Pneumonias	Total	Pneumococcic Pneumonias	Other Bacterial Pneumonias	Total
Good response to therapy without complications	28	9	37	31	9	40
Complications	6	2	8	8	0	8
Deaths	2	3	5	1	1	2
Total	36	14	50	40	10	50

Patients Treated with Aureomycin —Good Response Thirty-seven of the 50 patients treated with aureomycin had a good clinical response, with no complications

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[7] These tests were performed at the Virus Diagnostic Laboratory of the University of Washington School of Medicine and the Washington State Department of Health

[8] Dornbush A C., and Pelcak, E. J The Determination of Aureomycin in Serum and Other Body Fluids, Ann New York Acad Sc 51 218 1948

(Table 5) Twenty-eight of these successfully treated cases had pneumococcic pneumonia, 19 were considered seriously ill, and two had positive blood cultures The other nine patients had bacterial pneumonias in which pneumococci were not isolated Thirty-one of the 37 patients received 1 gm of aureomycin on admission, and 1 gm once a day for an average of six days Of the remaining six patients, two were given 2 gm daily in divided doses One of these patients was a 350-lb woman who was severely ill, the other was a man with mitral stenosis and congestive failure, who was also seriously ill Since it was not known that 1 gm daily was the optimal dose, it was considered safer to administer larger amounts in these two cases Four patients, who were disoriented, uncooperative, and had difficulty in ingesting oral medications, were given aureomycin intravenously as well as by mouth Of the 37 patients in this group, only two had received any treatment prior to admission Each had been given 300,000 units of penicillin procaine the day before entry, but both were still acutely ill, with high fever, and pneumococci were isolated from the sputum The course of a typical patient in this group is shown in Figure 1

TABLE 5—*Response to Therapy in Uncomplicated Cases*

	Pneumococcic Pneumonias		Other Bacterial Pneumonias		Total	
	Aureomycin	Chloramphenicol	Aureomycin	Chloramphenicol	Aureomycin	Chloramphenicol
Number of patients whose temperature reached normal in						
24 hr	16	15	4	6	19	20
48 hr	11	11	4	3	15	15
72 hr	1	5	1	0	3	5
Total	28	31	9	9	37	40
Average to reach normal (in days)	1.5	1.3	2 0	1 6	1.6	1.3

Complications In eight patients who were treated with aureomycin the hospital course was complicated As outlined in Table 6, one patient with pneumococcic pneumonia had a sterile effusion, while in another pneumococcic empyema (type 2) developed, which responded to intrapleural penicillin One man had pneumococcic *meningitis*, as well as pneumonia Following three days of intensive intravenous and oral aureomycin therapy, there was some improvement in the spinal fluid findings, but pneumococci were still present on culture Since his condition remained critical, aureomycin was discontinued and intensive penicillin therapy was begun, the meningitis was cured, but some mental impairment remained Three patients had delayed resolution of their pneumonias with a slow temperature response, the explanation in two of these cases was not clear, while in the third, cardiac decompensation may have played a role In one patient a partial collapse of the middle lobe occurred during therapy, and the temperature remained elevated for 11 days Bronchograms and bronchoscopy later demonstrated no satisfactory explanation for the collapse In the final case the pneumonia responded satisfactorily but the temperature *remained elevated* for 10 days owing to a severe thrombophlebitis

TABLE 6—*Complications and Deaths*

	Aureomycin Group	Chloramphenicol Group
Complications		
Sterile effusion	1	3
Relapse	0	1
Delayed resolution	3	2
Collapsed lobe	1	1
Meningitis	1	1
Empyema	1	0
Thrombophlebitis	1	0
Total	8	8
Deaths		
Pneumococcic pneumonia (type 3)	1	0
Pneumonia (Pneumococcus type 18 and Friedländer s bacillus)	0	1
Empyema	1	0
Multiple sclerosis aspiration pneumonia	1	0
Cardiac failure	1	0
Cerebrovascular accident	1	0
Multiple myeloma	0	1
Total	5	2

Deaths Five deaths occurred *among the 50 patients* treated with aureomycin, four were examined postmortem One, a chronic alcoholic aged 47, entered the hospital unconscious, with signs of a cerebrovascular accident and bilateral lower lobe pneumonia with bacteremia (type 12) He was given intensive intravenous aureomycin therapy, but he died two days after admission Autopsy revealed massive cerebral thrombosis which probably was the cause of death A man aged 67 with involvement of the left upper and lower lobes with bacteremia (type 3) entered the hospital desperately ill and went into circulatory collapse, with a subnormal temperature, shortly thereafter Despite intensive oral and intravenous administration of aureomycin, he died 38 hr after admission It seems probable that this patient died of an overwhelming infection in spite of therapy Three fatalities occurred in the patients with bacterial pneumonias of undetermined etiology One was a chronic alcoholic aged 63, who entered the hospital with a right lower lobe pneumonia On aureomycin, 1 gm daily, his temperature gradually decreased, but never reached normal levels A loculated effusion devel-

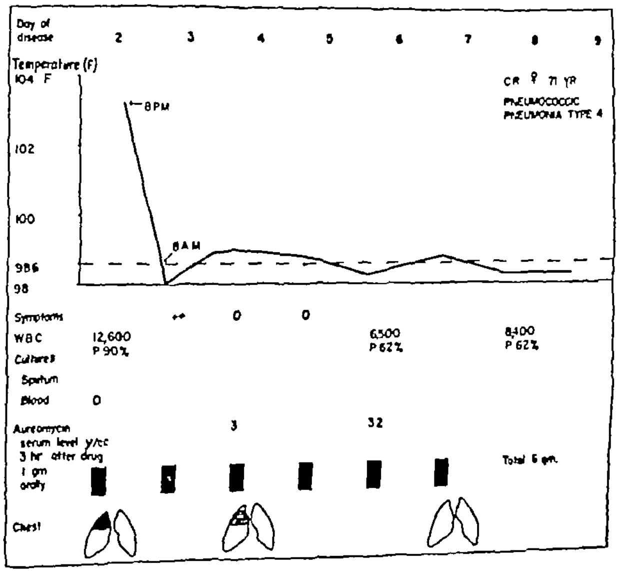

Fig 1—Clinical course of a representative patient treated with aureomycin

oped in the right chest, and 220 cc of slightly cloudy, sterile fluid was removed five days after admission. Dyspnea developed, and the heart, previously normal in size, was found to be markedly enlarged one week after entry. The congestive failure did not respond to the usual measures, and he died 16 days after admission. On autopsy there were minimal residual signs of pneumonia of the right lower lobe, with a thin layer of loculated, gelatinous pleural exudate. There was fatty infiltration of the liver, and hypertrophy and dilatation of the heart, of undetermined cause. This was a complicated case in which the pneumonia apparently responded to aureomycin, but in which heart failure appeared and was the cause of death. Another patient, a man aged 40 with multiple sclerosis who was unable to cough effectively, or raise sputum, was admitted with aspiration pneumonia. He was critically ill on admission, and a pure growth of Esch coli was cultured from tracheal aspirations. In spite of the daily administration of 300 to 500 mg of aureomycin intravenously, he rapidly grew worse and died after six days in the hospital. Post-mortem examination revealed an extensive bilateral bronchopneumonia. The role of aureomycin is difficult to evaluate in this patient as he had partial respiratory paralysis and aspiration of gastric contents. The fifth patient, a 74-year-old man with a right lower lobe pneumonia and Staphylococcus aureus and pneumococci in the sputum, had received penicillin in four days without improvement. His sputum then contained a pure culture of Esch coli. With aureomycin, 1 gm daily for six days, his temperature fell to normal, and on x-ray examination there was partial clearing of the infiltrations. Clinically, however, he became progressively weaker. X-ray density persisted in the right chest posteriorly, but no fluid was obtained when thoracentesis was attempted. He died six weeks after aureomycin was discontinued, and at autopsy was found to have an empyema on the right, with atelectasis and multiple abscesses of the right upper lobe. Unfortunately, cultures of the pus were not obtained.

Patients Treated with Chloramphenicol—Good Response. Forty of the 50 patients treated with chlorampheicol had a good response to therapy (Table 5). Of these, 31 had pneumococcic pneumonia, 20 were considered severely ill, and positive blood cultures were obtained in four. Nine patients had nonpneumococcic bacterial pneumonias, two of these were caused by Friedlander's bacillus, one by Hemophilus influenzae, and in six the etiologic organism was not isolated. The antibiotic was administered in the same dosage as aureomycin, i e, an initial dose of 1 gm followed by 1 gm daily for an average of six days. In this group only one patient had received therapy previously, he was given an unknown amount of oral penicillin the day before admission. The chart of a typical patient in this group is shown in Figure 2.

The three patients whose pneumonias were caused by gram-negative bacilli deserve special attention. Two of these had Friedlander's pneumonia. One responded to 1 gm of chloramphenicol daily with rapid improvement over a period of three days, and was entirely well, with a clear x-ray, within two weeks. The other patient, who was much sicker and had a positive blood culture, received 4 to 6 gm of chloramphenicol daily, the course of his disease was long and complicated by pulmonary abscess formation but eventually satisfactory. The third patient, despite the daily administration of 400,000 units of penicillin for three days, remained desperately ill. At that time he was found to have a shift from a mixed sputum flora to a nearly pure culture of Hemophilus influenzae, and a blood culture was positive for the same organism. He was transferred to the Infectious Disease Service, where chloramphenicol was given in amounts of 1 gm daily. There was a prompt response with a temperature fall and improvement from the signs of pneumonia within three days.

Complications. In eight patients treated with chloramphenicol complications developed (Table 6). These were all in proven pneumococcic pneumonias. One had a good response to a five-day course of treatment, but relapsed four days later, and with retreatment made an uneventful recovery. Small sterile effusions developed in three cases, but were not associated with a febrile reaction. Of the two patients with delayed resolution, one had bronchiectasis and the other had silicosis. Another patient developed a collapse of the right lower lobe during therapy. A 59-year-old man with a severe type-7 pneumonia and bacteremia received 1 gm of chloramphenicol on admission and a similar amount 12 hr later, but developed signs of pneumococcic meningitis 18 hr after entry. With massive intramuscular penicillin therapy he made a prompt recovery.

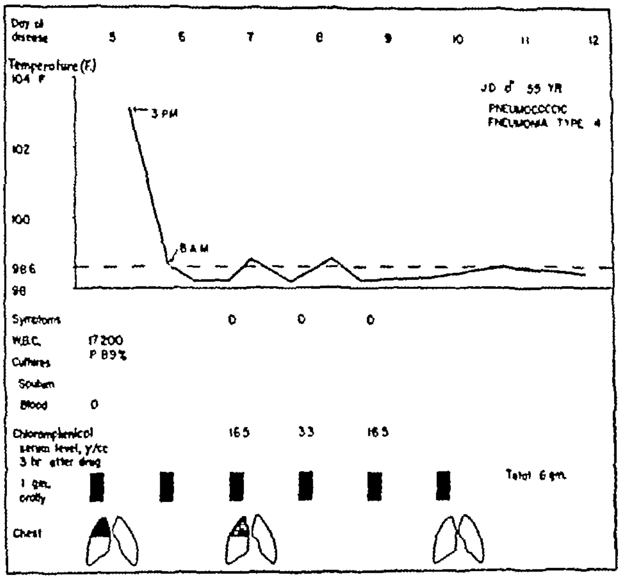

Fig 2—Clinical course of a representative patient treated with chloramphenicol

Deaths. Two fatalities were encountered in this group. One, a man aged 76 chronically ill with multiple myeloma, entered the hospital with signs and symptoms of pneumonia of both lower lobes. He was given 1 gm of chloramphenicol every 12 hr, with a fall in temperature to normal in four days, accompanied by a marked improvement in the clinical picture. However, despite a normal temperature and clearing on the x-ray, he became progressively weaker and died of the multiple myeloma on his 10th hospital day. The other fatality occurred in a man aged 74 with a type-18 pneumonia and bacteremia, following a history of four to five months' anorexia and weight loss with pain in the mid-back His condition was critical on admission He was given chloramphenicol resulting in a marked fall in temperature in the first two days He remained disoriented and incontinent, however, and when the temperature rose again two days later, he was given aureomycin intravenously He failed rapidly and died four days later Two cubic centimeters of pus were removed from his right lower chest the day before his death and Friedlander's bacilli were recovered on culture This man was more debilitated than could be explained on the basis of pneumonia, and in view of the long history may well have had some underlying disease, however, an autopsy was not obtained, and pneumonia must be regarded as the cause of death

COMMENTS

In the present study, favorable results have been obtained with both aureomycin and chloramphenicol in the treatment of bacterial pneumonias in adults The prompt response noted with aureomycin is similar to that previously described in the treatment of pneumococcic pneumonias with this antibiotic by Gocke and others,[1] and Dowling and associates[2] The results obtained with chloramphenicol are of special interest, since little information is available so far concerning its effectiveness in the treatment of bacterial pneumonias

Toxic manifestations were not observed with chloramphenicol With aureomycin, nausea, vomiting, and diarrhea which could be attributed to ingestion of the antibiotic occurred in only a few patients, and in no instance required a change to another antibiotic This low incidence of toxicity is probably due to the small doses administered Ten patients who were uncooperative or disoriented, or who were unable to take medications by mouth, were given aureomycin intravenously The intravenous preparation, which was given in doses of 100 mg every 8, 12, or 24 hr, was well tolerated and, when diluted in 100 cc or more of 5% dextrose or isotonic saline solution, caused no local reactions An intravenous preparation of chloramphenicol was not available at the time of this study

From a comparative standpoint, superiority can be claimed for neither antibiotic on the basis of the present series Although it was not possible to rigidly alternate the patients, the two groups treated were similar in most respects, and any clear-cut differences in therapeutic efficacy should have become evident. It is of interest that, as indicated in Table 2, pneumococci isolated from the patients treated were somewhat more susceptible in vitro to aureomycin than to chloramphenicol The explanation for the fact that the clinical response to chloramphenicol was equally as good as that to aureomycin may lie in the differences observed in blood serum concentrations following the administration of equivalent doses of the two antibiotics With aureomycin, serum levels four hours after the ingestion of 1 gm fell in the general range of 2 to 6 γ per cubic centimeter while with chloramphenicol levels of 15 to 25 γ per cubic centimeter were commonly observed

Optimal dosages of aureomycin and chloramphenicol have not yet been determined for most infections One condition that might be expected to respond to doses smaller than those usually employed is pneumococcic pneumonia, since pneumococci are highly susceptible to both antibiotics in vitro Accordingly, the majority of the patients in the present series received only 1 gm daily, which was given in a single dose because of the prolonged blood levels obtained with these antibiotics after oral administration Random blood samples, collected from 20 patients 24 hr following the oral administration of 1 gm, were found to contain aureomycin in every instance, in concentrations ranging from 0 025 to 0 8 γ per cubic centimeter

The results obtained on this regimen of 1 gm daily would appear to justify the conclusion that this dosage is adequate for the treatment of many, but possibly not all, patients with pneumococcic and other bacterial pneumonias Of the 81 patients treated with 1 gm daily, 57 were considered severely ill and six were bacteremic The response in this group was uniformly good Of the 19 patients who received more than 1 gm daily, 16 were considered severely ill, nine were bacteremic, seven were among the 16 patients who ran a complicated course, and four were among the seven patients who died In general, the patients who were given more than 1 gm daily were those who did not seem to respond to the smaller doses, and for the most part this lack of response was due to the presence of complications or preexisting diseases It is not known, of course, whether these complications would have been prevented or modified if larger doses had been given from the outset It was our impression, however, that they would not have been, and that the failures were not due to inadequate doses of the antibiotics We feel that a daily dose of 1 gm of either aureomycin or chloramphenicol is adequate for the majority of patients with bacterial pneumonias, but cannot be recommended as optimal for all cases at the present time In pneumonias caused by gram-negative bacilli, and especially Friedlander's bacillus, 3 or 4 gm daily is certainly indicated, at least until more information is available

At the beginning of the study it was anticipated that an appreciable number of viral pneumonias would be encountered However, there were only three patients in whom this diagnosis was established It therefore seemed wise to discard these three cases from the study, along with 18 others who were treated, but who on review were not found to meet the criteria for a diagnosis of bacterial pneumonia

Complications (Table 6) were similar in incidence and severity to those which have been observed in pneumonias treated with penicillin, and in previous studies with aureomycin Sterile pleural effusions were noted in four patients, and there were two pneumococcic empyemas Preparations of aureomycin and chloramphenicol suitable for intrapleural installation are not yet available and therefore empyemas, when they appear, must be treated with penicillin The two patients with pneumococcic meningitis are of special interest One, who had the full blown picture of meningitis on admission, showed some improvement in the spinal fluid findings on intensive aureomycin therapy, but cultures of the spinal fluid remained positive After three days he was started on penicillin, and the spinal fluid was sterile 24 hr later In the other patient signs and symptoms developed 18 hr after chloramphenicol therapy was started Definite conclusions cannot be drawn from two cases, but it is our opinion that in the treatment of pneumococcic meningitis aureomycin and chloramphenicol, which are primarily bacteriostatic in their action, are probably inferior to penicillin, which causes actual killing of pneumococci

There were seven deaths in the series (7%), which is a relatively low mortality rate in view of the fact that 59 of the 100 patients were over 50 years of age Of the seven deaths, only four can be definitely attributed to pneumonia or its complications (Table 6) In the other three patients, coexisting diseases played a major role in determining the fatal outcome (These results are comparable to past experience with penicillin at this hospital In 1949, 68 cases of bacterial pneumonia were studied Thirty-six [53%] of these were in patients who were over 50 years of age Blood cultures were positive in nine [13 5%] and there were six deaths [8 8% mortality])[9]

SUMMARY AND CONCLUSIONS

From Jan 1 to June 15, 1950, 50 patients with bacterial pneumonia were treated with aureomycin, and 50 with chloramphenicol Of the 100 patients, 76 had proved pneumococcic pneumonia, and blood cultures were positive for pneumococci in 15 (20%) In five, the pneumonia was caused by gram-negative bacilli, and in the remaining 19 the etiologic agent could not be definitely determined

The response to therapy was good in both groups, and superiority could not be claimed for either antibiotic

Complications occurred in 16 patients in the entire series There were seven deaths, only four of which could be attributed to pneumonia alone

Pneumococci isolated from the patients treated were somewhat more susceptible in vitro to aureomycin than to chloramphenicol On the other hand, blood serum concentrations four hours following the ingestion of 1 gm of chloramphenicol were considerably higher than those obtained with aureomycin It would appear that the greater susceptibility of pneumococci to aureomycin in vitro was offset by the higher blood levels attained with chloramphenicol, making the clinical effectiveness of the two antibiotics approximately equal, gram for gram

Eighty-one of the 100 patients were treated with 1 gm of aureomycin or chloramphenicol daily, given in a single dose, and the results with this regimen were in general excellent This dosage is certainly adequate for the majority of patients with pneumococcic pneumonia, but our study does not permit the conclusion that it is definitely optimal for all cases Larger doses are indicated in the treatment of pneumonias caused by gram-negative bacilli, especially in those caused by Friedlander's bacillus

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[9] Haviland J W Massey F C and Sparkman, D R Unpublished data

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HYPOPROTEINOSIS OF CHILDHOOD

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For many years we have encountered a repetitious combination of complaints in office practice with children The familiar list includes poor appetite, failure to gain weight and to grow normally, irritability, frequent gastrointestinal upsets, including vomiting and constipation, repeated bouts of infectious disease, dental caries, and pallor Frequently when a child has been brought in with one or two of these conditions as presenting symptoms, history and examination have revealed others

Gradually we came to realize that this combination of complaints is consistently associated with a certain type of dietary history The child's diet is nearly always adequate in minerals and vitamins but is not adequate in protein Ordinarily milk and carbohydrate foods are taken in large quantities, but meat, eggs, and other protein foods are neglected Prompt and dramatic response to provision of adequate protein has established this syndrome, in our minds, as a true deficiency disease

Surprisingly little has been written concerning the effects of protein deprivation on the infant and child except under conditions of rather severe deficiency[1] It is timely, we feel, to call attention to this milder form of protein deficiency, which we are convinced is one of the most prevalent clinically manifested deficiency diseases which affect children We have chosen to call this syndrome hypoproteinosis of childhood, in accordance with the terminology suggested by Miranda[2]

This is a preliminary report based on purely clinical observations, as exemplified by the following brief case reports, which are typical of hundreds in our files

REPORTS OF CASES

CASE 1 —*Presenting Complaint* —G B , a 20 mo -old white boy, was brought in because of irritability, listlessness excessive sleeping, failure to gain weight, and frequent infections of the upper respiratory tract

History —The boy had had these complaints for months He had been treated with repeated courses of sulfonamides and had been given several courses of liver' and thyroid presumably 'for anemia ' The dietary history revealed that he refused to eat solid foods except for high-carbohydrate tidbits He customarily drank at least a quart (950 cc) of milk daily

Salient Physical Findings —The child was poorly nourished His tissue turgor was poor He was pale and irritable

Laboratory Findings —Blood studies revealed a hypochromic microcytic anemia The hemoglobin content was 11 gm per 100 cc The red blood cell count was 3,500 000

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[1] (*a*) Clements F W Some Aspects of Protein Metabolism in Infants and Children M J Australia 2:404-409 (Sept. 21) 1946 (*b*) Wolpe, L. Z. Blood Protein Depletion in Infantile Eczema California Med. 67 156-159 (Sept.) 1947 (*c*) Petrides E P Hunger Edema in Children J Pediat 32 333 350 (April) 1948

[2] Miranda F de P Nutrition and Endocrinology with Special Reference to the Nutrition of the Mexican Indian J A M A 130 542-545 (Feb 21) 1948

Treatment.—A high protein diet, excluding milk, was prescribed. Small doses of ferrous sulfate were given.

Progress.—The child's general condition immediately improved. Infections of the upper respiratory tract were greatly reduced in number and severity. The appetite improved remarkably. The child gained weight, his irritability and listlessness disappeared, and his color became essentially normal.

Case 2.—*Presenting Complaint.*—J. T. B., a 4-yr.-old white boy, was brought in because of easy fatigability, nervousness, refusal to eat, and refusal to swallow food after chewing it. He often held his food in his mouth for hours.

History.—This only child lived with his parents and grandparents. He was subjected to much coaxing and bribing at meal time. Although he had always drunk quantities of milk and eaten crackers and cookies between meals, he refused to eat meat and other solid foods at the table.

Salient Physical Findings.—Obstreperous before the mother and grandmother left the examining room, this child became cooperative afterward. He was poorly nourished and had poor tissue turgor and mild pallor.

Treatment.—A high protein diet, excluding milk, was suggested. The mother and grandmother were receptive to the idea that the child's problems were due to their attitudes. Instructions were given that the child was to feed himself and not be fed. He was not to be denied the privilege of getting hungry. It was pointed out that the normal child will swallow when hungry.

Progress.—One month later the child had made an excellent weight gain. His appetite was good. His general appearance improved. There was no protest at the examination, even with the mother and grandmother present. His ready fatigability had lessened. He looked forward to his meals. The cooperative attitude of parents and grandparents made management in this instance easy and results gratifying.

Case 3.—*Presenting Complaint.*—E. T. and J. T., 6 yr.-old white twins, one male and one female, were brought in from another city for routine checkup.

History.—The boy as an infant had shown great reluctance in being weaned from strained foods. He drank quantities of milk and ate many sweets between meals. He ate little of solid foods. The girl had never liked milk but did eat quantities of meat, vegetables, cheese, and other solid foods.

Salient Physical Findings.—The boy was only fairly well nourished. He had considerable dental caries. The girl was well nourished, weighing 1½ lb. (0.75 kg.) more than her brother, and had excellent teeth.

Treatment.—A high-protein diet, without milk, was outlined for the boy. No change was suggested in the dietary management of the girl.

Progress.—In one month the boy's appetite was on a par with the girl's. He had made an excellent weight gain.

Case 4.—*Presenting Complaint.*—D. H., a 16 mo.-old white girl, was brought in because she refused to eat anything but strained foods and vomited when coarser foods were fed.

History.—This child had always drunk milk through a nipple and was taking a quart or more daily at the time we saw her. When attempts were made to feed coarser foods, she refused them or gagged and vomited so that the mother was afraid to offer them. She ate crackers and cookies between her bottle feedings.

Salient Physical Findings.—The girl was fairly well nourished. There were no other pertinent findings.

Treatment.—The importance of other foods in addition to milk was stressed. The bottle was discarded, and milk was discontinued temporarily. Strained foods were excluded. The girl was to be permitted to get hungry enough to take and swallow chopped foods.

Progress.—One month later the child had made an excellent weight gain, and her appetite had improved dramatically. Her vomiting had subsided.

Case 5.—*Presenting Complaint.*—D. I., 2½-yr.-old white boy, was brought in because of refusal to swallow anything but liquids. He had crying and breath holding spells which resulted in unconsciousness. He slept excessively, appeared to have no energy and was constipated.

History.—The child had shown the aforementioned symptoms for months. He had drunk milk from a feeding bottle through a nipple in the amount of a quart or more daily. He ate many graham crackers between feedings.

Salient Physical Findings.—The patient appeared fairly well nourished but was moderately pale. He was exceedingly irritable and cried considerably while being examined.

Treatment.—A high protein diet was prescribed, with milk temporarily excluded. The importance of hunger was emphasized. Between meal snacks were forbidden. The child's need for only one or two good meals daily was explained.

Progress.—In several follow-up visits excellent and progressive weight gains were observed. The appetite was greatly improved. The child was more alert and slept less. His breath holding spells had been discontinued since the first visit.

Case 6.—*Presenting Complaint.*—R. G., a 3½-yr.-old white boy, was brought in because of repeated bouts of otitis media.

History.—Tonsillectomy had been performed at the age of 2½ yr. because of frequent infections of the upper respiratory tract. The child had received repeated courses of antibiotics and sulfonamides. He had gained weight poorly, had a poor appetite, slept poorly, and was constipated. He drank large quantities of milk and frequently nibbled on cookies and crackers between the battles which were his meals. He refused to swallow food at the table.

Salient Physical Findings.—This only child was poorly developed and slender and appeared not to be well nourished. His tissue turgor was poor. He had a seropurulent discharge from the right aural canal.

Treatment.—The importance of protein in the diet was emphasized, as was the importance of permitting the child to become hungry. A high protein diet was prescribed. All food except fruit was excluded between meals. It was emphasized that the child must feed himself and must be dismissed from the table when he showed lack of interest in food. He was not to be punished with food.

The otitis media was treated with aureomycin, with prompt recovery.

Progress.—In one month the child gained 2 lb. (0.9 kg.). His appetite improved remarkably, his sleeping habits were better, and his constipation had been relieved.

Case 7.—*Presenting Complaint.*—J. S., a 19 mo.-old white girl, was brought in because of repeated episodes of high fever and breath holding spells and poor teeth.

History.—The infant was constipated and had been given castor oil daily for many weeks. She perspired a great deal. She refused all foods except milk and starches, and had done so since early infancy. Her milk intake was from 1 to 2 qt. (950 to 1,900 cc.) daily. The only other foods she ate were cereals, bread, cookies, crackers, and potatoes.

Three siblings were much older, the next in age being 14 yr. her senior.

Salient Physical Findings.—This infant was large but flabby. All her primary dentition was badly decayed. The upper front incisors had been extracted. She had a breath holding spell while being examined.

Treatment.—The parents, who were well-to-do farm people, were convinced that the child's plight was due to their oversolicitude. It was a revelation to them when it was pointed out that their own farm stock had been getting a much better diet than their infant. A high protein diet was prescribed, milk was excluded.

Progress.—In several follow up visits it was observed that the child had improved dramatically. Her tissue turgor became normal, her disposition improved. She had had no more breath holding spells since the first visit to the office. Her constipation was relieved. In a period of 18 mo. she had had no infection.

Case 8.—*Presenting Complaint.*—J. D., a 3 yr. old white boy was brought in because of frequent infections of the upper respiratory tract, poor appetite, and constipation.

History.—The child had always drunk considerable amounts of milk and had eaten carbohydrate foods and confections between meals. He had consistently refused meat and vegetables.

Salient Physical Findings.—This patient was poorly developed and nourished. His tissue turgor was poor, he had mild pallor, and his feet were moderately pronated.

Treatment —A high protein diet was prescribed, milk was excluded The parents were instructed to stop forcing the child to eat and to allow him to get hungry Confections and soft drinks were excluded from the diet We were apprehensive about parental cooperation because the father was a soft drink dealer

Progress —In several follow up visits the child made excellent progress His pallor disappeared He gained weight His appetite became good, his sleeping improved, and his constipation was corrected

CASE 9 —*Presenting Complaint* —L W, a 9½-yr-old white boy, was brought in because of poor teeth, frequent spells of vomiting, poor appetite, and frequent stools

History —This only child drank large amounts of milk and soft drinks He ate cookies and crackers between meals He refused meat and vegetables

Salient Physical Findings —This child was poorly developed and nourished He was moderately pale Several teeth had been extracted, and there were numerous unfilled large cavities

Treatment —A high-protein diet was prescribed, and milk was excluded Small doses of ferrous sulfate were given

Progress —A month later the child had made an excellent weight gain No further infection of the upper respiratory tract had occurred His appetite had definitely improved

SYMPTOMATOLOGY

Anorexia —A constant symptom is anorexia Anorexia is perhaps the most frequent complaint with which the pediatrician is confronted There is much confusion concerning this term It often means one thing to the parent and something entirely different to the physician Loss of appetite due to disease, such as infection, is usually of brief duration The parents seldom have time to get seriously worried about it Periodic reduction of appetite which occurs during the growth and development of the child may be disconcerting because it recurs and at times appears to last indefinitely Parents often regard this physiological disinterest in food as complete loss of appetite Failure to realize that the phenomenon is normal at certain ages leads to distressing family conflicts These conflicts set off a chain of reactions which may produce a state of malnutrition and true anorexia Thus, anorexia, while it is a result of hypoproteinosis, is also one of the principal causes

Failure to Gain Weight —Children with hypoproteinosis frequently fail to gain weight Misconceptions concerning the rate of weight gain in childhood parallel those concerning anorexia True failure to gain, which occurs in disease and malnutrition, is cause for concern On the other hand, a normal slowing of the rate of gain is often mistaken by parents for a failure to gain, and, like the concurrent reduction in appetite, leads to anxiety and to forcing of foods A forced diet is usually a poorly balanced diet and one low in protein Hypoproteinosis develops, and poor tissue turgor and poor muscular development are inevitable accompaniments

Vomiting —Vomiting as it occurs in hypoproteinosis is reminiscent of the cyclic vomiting described in the literature of former years [3] The dramatic relief obtained when the protein intake is rendered adequate demonstrates that organic factors are important in the causation of the vomiting In addition, psychogenic factors induced by parental oversolicitude play a part in the development of this ability to vomit Children with the syndrome learn to reject food on the slightest provocation, and there is daily provocation

Constipation —Constipation is frequently observed It is probably caused both by improper intestinal contents resulting from the unbalanced diet and by the poor muscle tone of the protein-deficient child [1a, b]

Increased Susceptibility to Infections —Frequent infections are observed in this group of children Contagious disease is apt to be unduly severe Persistent boils and styes occur Infections of the upper respiratory tract are frequent The importance of protein in defense against infection has been shown repeatedly [4] Evidence exists that diets inadequate in protein are significant in the rheumatic state and in tuberculosis [5]

Dental Caries —Protein is essential for normal formation of bone, and the influence of protein on the utilization of calcium has been shown to be of paramount importance [6]

Dental caries has been consistently found in our patients with hypoproteinosis Surveys among Eskimos and Indians have indicated a lower incidence of caries among those consuming a high protein, high fat diet [7] than in those subsisting on high-carbohydrate diets

Many of our patients with hypoproteinosis have had rampant dental caries with one or more abscessed teeth, and the nutritional status has not been improved until the abscessed teeth were removed This is in keeping with the observation that infection interferes with nitrogen balance [8]

Anemia —Poor color is frequently the presenting complaint in these patients with hypoproteinosis The anemia of hypoproteinosis appears to be a hypochromic anemia Massive doses of iron in the absence of adequate protein intake do not cure it When sufficient protein is provided, however, and small doses of iron are given, the response is immediate This repeated observation has convinced us that the anemia is as much due to lack of protein as to lack of iron and that protein is essential to its cure The necessity of adequate amounts of both iron and protein for normal hemoglobin formation is well-known[9]

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[3] Holt L E The Diseases of Infancy and Childhood New York D Appleton & Company 1898 p 287

[4] Cannon P R Protein Metabolism and Acquired Immunity J Am Diet A **20** 77-80 (Feb) 1944 Cannon P R Wissler R. W Wool ridge R. L. and Benditt E. P The Relationship of Protein Deficiency to Surgical Infection Ann Surg. **120** 514-525 (Oct) 1944 Anderson G K The Importance of Protein in Diet Therapy J Am Dietet A **21** 436-439 (July Aug) 1945 Guggenheim K. and Buechler E Nutrition and Resistance to Infection the Effect of Quantitative and Qualitative Protein Deficiency on the Bactericidal Properties and Phagocytic Activity of the Peritoneal Fluid of Rats J Immunol **58**: 133 139 (Feb) 1948

[5] Coburn A F and Moore L. V Nutrition as a Conditioning Factor in the Rheumatic State Am J Dis Child **65** 744-756 (May) 1943 Pottenger F M Jr and Pottenger F M Adequate Diet in Tuberculosis Am. Rev Tuberc **54**: 213 218 (Sept) 1946 Duncan A C Diet and Disease in the Subarctic, Lancet **2** 919-921 (Dec 20) 1947

[6] McCance R A, Widdowson E. M and Lehmann H The Effect of Protein Intake on the Absorption of Calcium and Magnesium Biochem. J **36**: 686-691 1942.

[7] Shourie K. L Dental Caries in Indian Children Indian J M Research **29**: 709 (Oct) 1941 Elvehjem C. A. A Nutritionist s View of the Caries Problem J Am Dent A **37** 410-415 (Oct) 1948 Waugh L. M I A Study of the Nutrition and Teeth of the Eskimo of North Bering Sea and Arctic Alaska J Dent Research **10** 387 (June) 1930 II A Study of the Nutrition and Teeth of the Eskimo of North Bering and Arctic Alaska ibid **11** 453 (June) 1931, III Nutrition and Health of the Labrador Eskimo With Special Reference to the Mouth and Teeth ibid **8** 428 (June) 1928, cited by Elvehjem C A A Nutritionist s View of the Caries Problem J Am Dent. A **37** 410-415 (Oct) 1948

[8] Himsworth, H P Protein Metabolism in Relation to Disease Presidential Address in the Section of Experimental Medicine and Therapeutics of the Royal Society of Medicine abstracted Brit. M J **2** 662 663 (Nov 2) 1946 Graham J R and Scott, T M Notes on the Treatment of Tetanus New England J Med **235** 846-852 (Dec 12) 1946

Laboratory Data —As we stated earlier in the paper, this preliminary report is based on clinical observations Laboratory work in our office practice has been limited to routine urinalysis, with other tests performed only when specifically indicated The only significant laboratory evidence which we have to offer at the present time relates to the rather frequent observation of a hypochromic anemia

Studies are now under way which are designed to determine the blood picture in all patients with hypoproteinosis These studies will endeavor, among other things, to determine the actual blood protein level in patients with mild hypoproteinosis and the value of the hemoglobin level as a criterion of hypoproteinosis

DIAGNOSIS

The diagnosis of hypoproteinosis in childhood is based on the dietary history and the signs and symptoms just discussed There is no satisfactory simple laboratory test for moderate protein deficiency It is usually not feasible to do special blood studies in private practice on ambulatory patients who do not appear to be in serious trouble

A dietary history, taken carefully and properly evaluated, is essential for diagnosis Typically, there is a history that the child is a good milk drinker but that "he does not eat" at mealtime It is usually admitted somewhat reluctantly that the child does eat as he pleases between meals, usually such foods as "cookies, crackers, soft drinks, and candy," all highly refined carbohydrate foods

The pitfalls in taking a dietary history are legion. Reactions to questions are likely to be influenced by what is assumed to be the right answer Moreover, parents frequently do not have accurate knowledge of the amounts of various foodstuffs actually eaten by the child The question "Does Junior eat meat?" may be answered by an emphatic "Yes" from the mother Further probing is likely to reveal that he eats a bite or two of meat but a plateful of potatoes and bread A detailed story of the child's food intake shows a predominance of starchy foods, milk, and sweets and an almost total absence of solid protein foods, such as meat and cheese Analysis of this diet reveals an inadequate protein content[10]

History taking further reveals that parents often think children eat the same foods because they eat at the same table It is not unusual to find that one sibling may be in an excellent state of nutrition while another suffers from hypoproteinosis (Case 3) One may prefer meat, cheese, and fruits, the other, starches and milk Calculation of the siblings actual intake of protein, fat, and carbohydrate reveals startling dissimilarities

ETIOLOGY

What is the cause of childhood hypoproteinosis? The condition is certainly understandable in the poverty-stricken The cost of protein foods is relatively high, while starches and sweets are inexpensive But why should children in families in which no expense is spared frequently consume a diet woefully deficient in protein? The basic reason is a general lack of understanding by parents of the fundamentals of nutrition

Painstaking efforts have been directed toward teaching the laity some facts about food requirements Sources of lay information are, however, limitless and often unreliable, and many of the popular theories have little in common with facts

There is a tendency to overemphasize certain articles of diet, particularly milk because of its calcium content. Calcium, one of many essential nutrients, has so fired the public imagination that it is often the primary parental concern in the nutritional management of the growing child Vitamins also have been made to loom importantly in the lay mind Children of today are exposed to an array of highly advertised, palatable concoctions that did not exist a generation ago Grandparents and other fond relatives shower children with tasty tidbits Few parents, however, have heard of the term "protein" in connection with the nutrition of their children

Superficially it might seem that if the child drinks milk in liberal quantities his protein intake should be adequate Milk, however, provides only 1 gm of protein to the ounce (30 gm) The recommended daily allowance of protein for young children is 40 to 50 gm[11] Even a quart of milk a day will not provide sufficient protein for adequate growth and development, and the consumption of this much milk at certain ages is likely to spoil the child's appetite for the solid foods, such as meat, eggs, and cheese, that make a much greater protein contribution in proportion to their bulk

Little has been done, moreover, in educating parents on the changing nutritional requirements during different phases of growth and development. It is seldom pointed out that growth and appetite, rather than energy and appetite, are interdependent Since growth does not occur in steady increments but accelerates and decelerates at various age levels throughout childhood, appetite of necessity must vacillate at different ages And energy expended has little to do with the quantity of food the child will consume

Psychological factors loom large in the etiology of cases of hypoproteinosis seen in private practice Mother is determined to see that her child gets the proper foods (particularly milk) in quantities which she has been led to believe his energy and increasing age necessitate This often is in conflict with the child's fluctuating growth needs This conflict is especially likely to originate in the second year of life The rate of weight gain decreases when children approach the end of the first year The 2 yr old's rate of gain is about one-sixth that of the 4-mo - old infant A period of minimum weight gain is reached when the child is about 2 to 2½ yr of age At this age he does not need or want much food His interests are elsewhere His personality and his aggressiveness are developing On the other hand, the mother's instinctive interest in feeding her child has not waned She does not understand why this runabout does not share her enthusiasm for the feeding process She becomes frantic lest her child will not gain as much as the neighbor's or will not eat every article of food that she thinks necessary As the mother's anxiety and determination increase, the assertive child's persistence in refusal likewise increases It then becomes a matter of "getting something into him " This something is usually the wrong kind of food and is almost invariably lacking in protein The sweet, starchy foods taste better Subsequently, hypoproteinosis becomes manifest.

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[9] Weech A A Wollstein M and Goettsch E Nutrition Edema in the Dog· V Development of Deficits in Erythrocytes and Hemoglobin on a Diet Deficient in Protein J Clin Investigation **16**: 719 728 (Sept.) 1937 Orten A U and Orten J M The Role of Dietary Protein in Hemoglobin Formation J Nutrition **26** 21 31 (July) 1943 Stare F J and Thorn G W Council on Foods and Nutrition Protein Nutrition in Problems of Medical Interest, J A M. A **127**: 1120-1127 (April 28) 1945 Darby W J Iron and Copper, J A. M. A. **142**: 1288 1295 (April 22) 1950

[10] Bowes A deP and Church C F Food Values of Portions Commonly Used ed 6 1946 (Available from Anna dePlanter Bowes, 311 S Juniper St. Philadelphia 7 Pa)

[11] Food and Nutrition Board National Research Council Recommended Dietary Allowances Revised 1948 Reprint and Circular Series No 129 (Oct.) 1948

MANAGEMENT

The treatment of hypoproteinosis is sometimes not simply that of prescribing a diet adequate in protein When hypoproteinosis is due to improper parental attitudes and feeding technics, education is required It is difficult to dislodge preconceived notions concerning nutrition One effective way to attack these mistaken ideas is to compare the nutritional care of children with that accorded animals It is pointed out that animals could not survive a diet of the highly refined carbohydrate food permitted children Parents are appalled to learn that their dogs and cats and farm animals are given better diets than their children

Moderately High Protein Diet

Breakfast	Noon
Fruit juice	Fruit
Egg bacon or ham	Cottage cheese egg or meat
Cereal or toast and butter	Bread or crackers and butter
4-6 oz. (120-180 gm) of milk *	4-6 oz. of milk *

Evening

Vegetables
Meat fish or chicken
Bread and butter
Fruit or gelatin dessert
4-6 oz of milk *

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* Omitted if child has previously consumed large quantities of milk to the exclusion of other foods

An attempt is made to add the term "protein" to the lay repertory, along with "calcium" and "vitamins " The parents are given a list of the important foods rich in protein Minerals and vitamins are properly placed in the scheme of things We then try to convince parents that it is not how much the child eats but what he eats that is essential to his nutritional well-being The accompanying table presents an outline of a moderately high protein diet

With the child who has been consuming large quantities of milk to the exclusion of other foods, the transition to a diet adequate in protein is facilitated if milk is excluded Attempts to taper off the milk intake invite failure of the whole program It is necessary to reassure parents that no calamity will befall the child if he does not receive milk for a time Amazingly, after these children have been on a milk-free diet for a short period they seldom have the same craving for it when it is introduced again

A special effort is made to explain that while the diet lists three full meals the child should not be expected to eat all of them We emphasize that consuming two good meals a day should be the probable limit of our expectation for the preschool child The child's attitude and desires at breakfast usually determine what to expect at subsequent meals Many children have a marked distaste for breakfast, as do many adults In this event the noon meal is usually the large one On the other hand, with some children breakfast is the largest meal of the day In this case lunch will probably be a light meal, and the evening meal will be well taken Parents must be admonished not to make the mistake of trying to stuff a runabout child with three large "harvest hand" meals daily

Another point to be emphasized is the great importance of hunger Its gratification is a pleasant sensation Yet most children are never permitted the privilege of getting hungry The mother dreams of her child being hungry enough to sit down and enjoy a good meal, but she will not permit him to become this hungry She is dismayed when it is pointed out that her child is actually underprivileged in that he has been denied gratification of the sensation of hunger

Parents must be impressed with the value of a pleasant atmosphere at mealtime Nagging and forcing of food make these family gatherings a thing to be dreaded, and even accompanied by tears, so that no one eats well Since emotions exert a powerful influence on appetite, it is no wonder that the child will eat only between meals —when he is free of nagging and cajolery The child should be taught that the eating of meals is a privilege, not a duty No attempts should be made to force or even to urge him to eat He should not be allowed to think, however, that he has come to the table to be entertained If he is disinclined to eat, he should be promptly dismissed from the table Cooperation of all members of the family and consistency of attitude and practice are essential

It is impossible for parents to make the complete reversal of their attitudes outlined here unless they understand why it needs to be done The physician must be willing to spend time and to give proper attention to detail if hypoproteinosis in children is to be effectively combated When full parental cooperation and acceptance of the program are obtained, results are dramatic

SUMMARY AND CONCLUSIONS

A group of symptoms ordinarily taken as individual and unrelated complaints have been recognized as belonging to a common syndrome, designated as hypoproteinosis These symptoms include anorexia, failure to gain weight, gastrointestinal disturbances, including vomiting and constipation, frequent bouts of infectious disease, dental caries, and anemia The dietary history usually reveals liberal consumption of milk and carbohydrate foods, as well as adequate intake of minerals and vitamins, but insufficiency of solid protein foods, such as meat, eggs, and cheese Difficulties in taking the dietary history are manifold Yet a proper dietary history is essential for diagnosis Effective management not only requires a diet ample in protein but has educational and psychological facets as well Recognition of this problem and of its solution will spectacularly improve the health and well-being of children and will be a source of gratification to parents and physicians alike

216 S E Riverside Dr (Dr Lynch)

CYTOLOGICAL STUDY OF THE UPPER GASTROINTESTINAL SEDIMENT

ITS VALUE, AS CORRELATED WITH ROENTGENOLOGIC AND CLINICAL FINDINGS, IN THE DIAGNOSIS OF CANCER

Joseph E Imbriglia, M D , George N Stein, M D
and
Mieczyslaw S Lopusniak, M D , Philadelphia

Since August, 1948, cytological examination of sediment obtained from the upper gastrointestinal tracts of more than 100 patients has been performed at Graduate Hospital of the University of Pennsylvania The data obtained by this procedure in the diagnosis of cancer have been compared with the roentgen interpretations, and each datum, in turn, has been correlated with the clinical, surgical, or autopsy findings Almost all the patients examined were clinically suspected of having organic disease of the upper gastrointestinal tract and were referred for study by the surgeons or gastroenterologists of Graduate Hospital These patients were studied by cytological and roentgenologic examinations

PROCEDURE

As a preparation for the aspiration of gastric sediment, the patients were requested to fast for eight hours A 16 F Rehfuss tube, containing additional perforations in its distal 6 cm to facilitate more complete aspiration, was passed, with fluoroscopic guidance

When gastric sediment was to be examined, the patient was placed in the supine position with the tip of the tube well into the antral portion of the stomach The fasting residuum was aspirated and retained The stomach was lavaged five or six times with approximately 50 cc of isotonic sodium chloride solution each time The patient was rotated so that the mucosa of the entire stomach was "washed down" thoroughly The fasting and lavage specimens were then centrifuged at high speed, without delay, for 20 minutes Following centrifugation, the supernatant fluid was drawn off and smears were made of the sediment on albumin-coated slides, these were fixed before drying in equal parts of 95% ethyl alcohol and ether Ordinarily, 300 cc of lavage will yield enough sediment to make 12 to 15 slides for cytological examination After fixation, the slides were stained by the technique employed by Papanicolaou [1a]

In suspected esophageal lesions, the tube was passed with the patient erect The tip of the Rehfuss tube was positioned immediately distal to the lesion The patient was asked to swallow a mouthful of isotonic sodium chloride solution, and five seconds thereafter aspiration was initiated by applying suction by means of a large syringe This process was repeated until approximately 300 cc of fluid was collected The lavage specimens were then treated in the same manner as the gastric specimens

When, as a result of gastric retention, there is more than the usual amount of fasting residuum, the cytological examination is frequently unsatisfactory because the desquamated epithelial cells become lost in the débris and autolysis of the tissue cells results from the action of the gastric juice It cannot be overemphasized that cytological study of the residual contents of a retentive stomach is most difficult

Almost all the roentgenograms were reported by residents in training No attempt was made to review the films for diagnostic purposes for this report The statistics were gathered from the original interpretation

All patients were grouped into five categories anatomically, depending on the roentgen location of the lesion the esophagus, cardia of the stomach, body of the stomach, antrum or pylorus

ESOPHAGUS

A very high degree of accuracy was achieved by both the cytological and roentgenologic methods in the diagnosis of esophageal lesions A total of 13 patients was examined, eight of these had cancerous lesions, and the remainder had benign lesions

All except one of the cancerous lesions were correctly diagnosed cytologically In that one case the clinician requested an examination of the gastric sediment The tip of the Rehfuss tube was passed to the antrum of the stomach and the gastric mucosa was lavaged with isotonic sodium chloride solution This emphasizes the importance of obtaining material (desquamated epithelium) from the proximity of the lesion All the cancerous cases were correctly diagnosed by the roentgen method The five benign esophageal lesions were correctly diagnosed by both methods (table 1)

CARDIA

Of the 12 lesions found in the cardia of the stomach, two were malignant and 10 were benign

In the cancerous group, the cytologist incorrectly diagnosed one lesion as benign The roentgenologist correctly diagnosed one as cancerous, the second was diagnosed as equivocal

In the benign group, the cytological method yielded only one error among the 10 patients studied The

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From the Department of Pathology (Dr Imbriglia) the Department of Roentgenology (Dr Stein) and the Department of Gastroenterology (Dr Lopusniak) Graduate Hospital of the University of Pennsylvania

[1] (*a*) Papanicolaou G N and Cooper W A Cytology of Gastric Fluid in Diagnosis of Carcinoma of Stomach J Nat. Cancer Inst **7** 357 1947 (*b*) Fremont-Smith M Graham R M and Meigs J V Early Diagnosis of Cancer by Study of Exfoliated Cells J A M A **138**: 469 (Oct 16) 1948 (*c*) Pollard H M Bryant H C Block M. and Hall W C. Diagnosis of Gastric Neoplasms by Cytologic Examination of Gastric Secretions, ibid **139** 71 (Jan 8) 1949 (*d*) Richardson H L. Queen F B and Bishop F H Cytohistologic Diagnosis of Material Aspirated from Stomach Accuracy of Diagnosis of Cancer Ulcer and Gastritis from Paraffin Embedded Washings Am. J Clin. Path **19**: 328 1949 (*e*) Swarts J M Ragins A B Bernstein A and Meyer J Diagnosis of Gastric Cancer by Cytologic Examination of Gastric Washings Gastroenterology **14**: 265 1950 (*f*) Botsford T W and Tucker M R Application of Cytologic Smear Methods to Cancer Diagnosis in a General Hospital J A M A **142**: 975 (April 1) 1950

roentgen method incorrectly diagnosed two of the 10 as cancerous and four as equivocal (table 2)

The roentgenologic evaluation of benignancy or malignancy of lesions of the cardia is difficult, the results obtained here vary little from the percentage of error generally experienced Many of the roentgenologically demonstrated defects of the cardia were considered equivocal or cancerous, this is understandable, since benign pathologic processes do not commonly occur at this site Most of these patients underwent exploratory operations and in some the surgeon was unable to explain the roentgen configuration The rather high degree of accuracy obtained by the cytological method seems to indicate that cytological studies should be done routinely when abnormalities are discovered by roentgen examination.

TABLE 1 —*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Esophagus*

		Roentgen Diagnosis			Cytological Diagnosis	
Proved Cases of Cancer	Number of Cases	Benign	Malignant	Equivocal	Benign	Malignant
Infiltrating lesions	7		7		1*	6
Polypoid lesion	1		1			1
Total	8		8		1	7
Proved Benign Cases						
Infiltrating lesions	3	3			3	
Normal	2	2			2	
Total	5	5			5	

* Desquamated epithelium was obtained from the stomach instead of from the esophagus

BODY

There were 35 patients with lesions located in the body of the stomach, 17 of the lesions were malignant, 18 were benign

Of the cancerous lesions examined cytologically, 15 were correctly diagnosed as malignant and two incorrectly, as benign In each of the incorrectly diagnosed cases, the lesion was an infiltrating intramural carcinoma, since the mucosa was not involved, the desquamated cells that were examined presented a normal appearance Errors such as these are inherent in the technique and cannot be eliminated Only one of the 17 cancers was diagnosed incorrectly by the roentgen method This, too, was an infiltrating intramural carcinoma

TABLE 2 —*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Cardia of the Stomach*

		Roentgen Diagnosis			Cytological Diagnosis	
Proved Cases of Cancer	Number of Cases	Benign	Malignant	Equivocal	Benign	Malignant
Polypoid lesions	2		1	1	1	1
Total	2		1	1	1	1
Proved Benign Cases						
Polypoid lesions	6	2	1	3	5	1
Ulcerating lesions	3	1	1	1	3	
Normal	1	1			1	
Total	10	4	2	4	9	1

Only one of the 18 benign lesions was incorrectly diagnosed (false positive) by the cytological method The roentgenologist, however, diagnosed five incorrectly as cancerous and two as equivocal in this same group (table 3)

ANTRUM

Of the 13 lesions in the antrum of the stomach, four were malignant and nine benign All four of the cancers were correctly diagnosed by the cytological study Three lesions were correctly diagnosed by the roentgen study, the fourth was interpreted as equivocal In the group of nine benign lesions, there were two false positives demonstrated by the cytological method The roentgenologist diagnosed one of these nine benign lesions as malignant and two as equivocal (table 4)

PYLORUS

There were 12 lesions located in the pyloric canal, all of which were benign Only one false positive reaction was obtained by the cytological method Roentgenologically, eight were correctly diagnosed as benign, but four were incorrectly interpreted, two, as malignant and two, as equivocal (table 5)

TABLE 3 —*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Body of the Stomach*

		Roentgen Diagnosis			Cytological Diagnosis	
Proved Cases of Cancer	Number of Cases	Benign	Malignant	Equivocal	Benign	Malignant
Polypoid lesions	4		4			4
Infiltrating lesions	7	1	6		2	5
Ulcerating lesions	6		6			6
Total	17	1	16		2	15
Proved Benign Cases						
Polypoid lesions	5	1	2	2	5	
Ulcerating lesions	13	10	3		12	1 ( )
Total	18	11	5	2	17	1

* This diagnosis was incorrect

TABLE 4 —*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Antrum of the Stomach*

		Roentgen Diagnosis			Cytological Diagnosis	
Proved Cases of Cancer	Number of Cases	Benign	Malignant	Equivocal	Benign	Malignant
Infiltrating lesions	2		2			2
Polypoid lesion	1		1			1
Ulcerating lesion	1			1		1
Total	4		3	1		4
Proved Benign Cases						
Infiltrating lesions	3	2		1	3	
Polypoid lesion	1	1			1	
Ulcerating lesions	4	2	1	1	2	2
Normal	1	1			1	
Total	9	6	1	2	7	2

The data on all nonmalignant or benign cases are listed in table 6

The data on all cancerous cases are listed in table 7

COMMENT

Recent papers dealing with the application of the cytological method to the diagnosis of cancer of the stomach report accuracies ranging from 35 to 74% [1]

We agree with Swarts and his associates,[16] who state that unsatisfactory specimens are largely responsible for the poor results For that reason we took particular care, as described above, to obtain satisfactory specimens Two of us (J E I and M S L) personally lavaged the stomach, obtained the specimens, centrifuged them, and prepared the slides All the slides were examined by one of us (J E I) It is only when painstaking care is given to these details that accurate results can be obtained

The roentgenologic and cytological methods are equally accurate in the diagnosis of cancerous lesions regardless of their location in the esophagus or stomach The location and gross pathologic character of a lesion are features discernible by roentgenologic and endoscopic examinations A cytological diagnosis of cancer is an important one, its accuracy is affected only by the care with which the specimens are obtained and by the experience of the cytologist

TABLE 5 —*Comparison of Roentgen and Cytological Diagnoses in Lesions of the Pyloric Canal*

Proved Benign Cases	Number of Cases	Roentgen Diagnosis			Cytological Diagnosis	
		Benign	Malignant	Equivocal	Benign	Malignant
Polypoid lesions	2	1	1		2	
Infiltrating lesions	8	5	1	2	7	1
Ulcerating lesions	2	2			2	
Total	12	8	2	2	11	1

Although the cytological study gave a higher number of correct diagnoses in the benign lesions, we believe that too much reliance should not be placed on a negative or noncancerous report False negative findings may result (1) if sediment is improperly obtained from a retentive stomach, (2) if the lesion does not involve the mucosa, and (3) if an ulcerating cancer has become secondarily infected

In our opinion, the cytological examination of sediment is an important and valuable adjunct to roentgenography and endoscopy in the diagnosis of cancerous lesions of the esophagus and stomach Two intraepithelial carcinomas, one esophageal [2] and the other gastric, were correctly diagnosed cytologically, thus giving promise for the diagnosis of cancer before it is advanced If enough properly trained cytologists were available, it might be feasible to use this method for mass surveys

TABLE 6 —*Correlation of Diagnoses of 71 Proved Noncancerous Cases*

Roentgen Diagnosis			Cytological Diagnosis	
Benign *	Cencerous	Equivocal	Benign *	Cancerous
51	10	10	66	5

* This classification includes 17 control subjects

TABLE 7 —*Correlation of Diagnoses of 31 Proved Cases of Cancer*

Roentgen Diagnosis			Cytological Diagnosis	
Benign	Cancerous	Equivocal	Benign	Cancerous
1	28	2	4*	27

* One patient had cytological studies of the stomach but cancer was in the esophagus

SUMMARY

Cytological and roentgenologic examinations were performed on more than 100 patients with gastrointestinal complaints These findings were compared with the clinical, surgical or autopsy findings

In 31 cases in which cancer was ultimately proved, the cytological results were accurate in 27 The roentgen diagnosis was of about the same degree of accuracy, being correct in all but three cases

In 71 cases in which no cancer was found, the cytological results were correct in 66, the roentgenologic results were correct in only 51 cases

The value of a noncancerous or negative cytological diagnosis has not yet been determined

The care used in obtaining the specimens and the experience of the cytologist undoubtedly account for the high degree of accuracy

Despite the known difficulties associated with the procedure, cytological examination should be employed in all cases of suspected cancer, as a procedure complementary to roentgenography and endoscopy

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[2] Imbriglia J E and Lopusniak M S Cytologic Examination of Sediment from the Esophagus in a Case of Intra Epidermal Carcinoma of the Esophagus Gastroenterology **13** 457 1949

CLINICAL NOTES

LEPTOSPIRAL INFECTION IN MAN TREATED WITH TERRAMYCIN

REPORT OF A CASE

Daniel Liebowitz, M D
and
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Several reports of Leptospira icterohaemorrhagiae infection in man treated with penicillin and aureomycin have appeared in the recent literature [1] One report dealing with the use of penicillin stated that rapid clinical improvement was observed within a 36 hour period in 16 patients [1b] However, the general experience has been that if penicillin does affect the disease, it does not do so dramatically [2] Two recent papers suggest that aureo-

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[1] (*a*) Leibowitz, S Kissin M and Rinzler S H Weil s Disease Report of 5 Cases Am J Med **8**:314 1950 (*b*) Bulmer E Weil s Disease in Normandy Its Treatment with Penicillin Brit M J **1** 113 1945 (*c*) Patterson H M Weil s Disease Observations in 61 Cases with Special Reference to the Use of Penicillin in 6 Cases J A M A **134** 1077 (July 26) 1947 (*d*) Heilman F R and Herrell W E Penicillin in Treatment of Experimental Leptospirosis Icterohaemorrhagica (Weil s Disease) Proc Staff Meet Mayo Clin **19**:89 1944 (*e*) Heilman F R Aureomycin in the Treatment of Experimental Relapsing Fever and Leptospirosis Icterohaemorrhagica (Weil s Disease) Proc Staff Meet Mayo Clin **23** 569 1948 (*f*) Cross R M Penicillin in Weil s Disease Lancet **1**:211 1945 (*g*) Reid E A S and Reed R W Leptospirosis Icterohaemorrhagica or Weil s Disease Canad M A. J **63** 479 1950 (*h*) Brainerd H , Lennette E H Merklejohn G Bruyn H B Jr., and Clark, W H Jr The Clinical Evaluation of Aureomycin J Clin Investigation **29** 922, 1949 (*i*) Lurie I Leptospirosis Ictero-hemorrhagica (Weil s Disease) Treated with Aureomycin Report of a Case Acta Med orient **8** 188 1949

[2] Beeson P B in Conn H F Current Therapy Latest Approved Methods of Treatment for the Practicing Physician Philadelphia, W B Saunders Company 1950 pp 49 50

mycin is an effective therapeutic agent in this disease [3] The purpose of this report is to describe a case of Leptospira infection and its dramatic response to terramycin

REPORT OF A CASE

C D, a white man, 56, was admitted to the Veterans Administration Hospital, Cleveland on Aug 7, 1950 complaining of weakness, poor appetite, and diarrhea of five days duration The patient noticed that his skin had become yellow, his urine dark, and his stools light in color during this period Past history revealed that he had been employed as a railroad clerk for many years and that he was treated for heart trouble" in 1947 He said he had drunk four to five bottles of beer daily most of his life There was no evidence of an inadequate dietary intake

Physical examination on admission revealed a deeply icteric, semistuporous white man who appeared acutely ill Oral temperature was normal, respirations were 16 per minute and were deep and regular There was a regular sinus tachycardia of 100 per minute The blood pressure was normal There were scattered areas of purpura over the high shoulder, thorax and abdomen There was a hemorrhagic herpetic lesion on the lower lip, and a necrotic ulceration of the soft palate and uvula was present The lungs were clear to auscultation and percussion except for an occasional high pitched wheeze at the bases The heart was slightly enlarged to percussion, and the sounds were of poor quality The liver was enlarged to the level of the umbilicus and was tender to palpation There was generalized shotty lymphadenopathy Neurological examination revealed residuals of an old right peripheral facial paralysis The remainder of the physical examination was normal

Laboratory Data—Examination of the blood showed a mild anemia The peripheral white cell count was 16,000 with 92% neutrophiles Stool examinations were positive for occult blood for the first five days of hospitalization Urinalysis revealed 2 + albuminuria on two occasions with many granular casts in the sediment Bile was present in the urine repeatedly, while urobilinogen, at first absent, later appeared in normal amounts The blood urea nitrogen was 80 mg, and nonprotein nitrogen was 109 mg per 100 cc on admission Liver function tests were grossly abnormal Sulfobromophthalein (bromsulphalein®) sodium retention in one hour was 46% The icterus index was 459 units Serum bilirubin was 37 mg per 100 cc The Van den Bergh reaction at the end of one minute was 30 mg per 100 cc Total proteins were within normal limits but there was a relative decrease in the albumin fraction with an albumin globulin ratio of 1 1 The cephalin flocculation test was 4 + at the end of 24 hours The remainder of the liver chemistries including thymol turbidity, total and free cholesterol prothromin time, and alkaline phosphatase, were within normal limits Bleeding, clotting and clot retraction times were within normal limits A red cell fragility test was normal Spinal fluid examinations showed no abnormalities The chest roentgenogram on admission showed finely nodular and linear densities throughout both lung fields The cardiac silhouette was within normal limits

Hospital Course—The patient became progressively worse He remained in a semistuporous condition for the first five hospital days receiving several blood transfusions and parenteral feedings during this time Daily injections of 600 000 units of aqueous procaine penicillin were administered for the first five hospital days On the third hospital day a tentative diagnosis of leptospirosis was made, and blood was drawn for agglutinations The first agglutinations were reported positive on the fifth hospital day in dilutions of 1 1 000 for Lept icterohemorrhagiae and 1 650 for Lept canicola These titres were obtained with the use of dead organisms as antigen, and titres of 1 300 or over are considered diagnostic with the method used [4] On the fourth hospital day a routine electrocardiogram showed that the patient was having alternating periods of auricular flutter and fibrillation Digitalization promptly reverted the rhythm to normal On the same day a maculo-papular rash appeared on the thorax, abdomen, upper arms, and thighs, and he appeared moribund Since he had shown no response to penicillin, we decided to treat the patient with terramycin Penicillin, therefore, was discontinued, and 0.5 Gm of terramycin hydrochloride was administered every four hours by mouth Within 24 hours the stools had become negative for occult blood, and clinical improvement was noticeable After three days of treatment, the patient's sensorium had cleared He was alert, began to sit up in bed, and was taking food by mouth The maculo papular rash had begun to fade, and the herpetic lesion on his lip was drying up The necrotic lesions of the soft palate and uvula were healing, and the areas of purpura had disappeared Five days after treatment with terramycin was begun, the serum bilirubin had dropped from 37 1 mg to 12 1 mg per 100 cc, and the other liver chemistries had shown a concomitant trend toward normal The blood urea nitrogen gradually fell reaching a normal level of 20 mg per 100 cc by the 18th day of treatment A chest roentgenogram taken on the 16th hospital day, 11 days after initiation of therapy with terramycin, was reported as normal Convalescence was gradual, and on the 25th hospital day the patient was apparently well

Agglutinations on the 24th hospital day were again positive in dilutions of 1 1,000 for Lept icterohaemorrhagiae and 1 650 for Lept. canicola On the 37th and 44th hospital days, agglutinations with use of the dead organisms were reported as negative Blood drawn on the 40th hospital day was, therefore, sent to the United States Public Health Service Laboratories at Chamblee, Ga, where, living organisms being used as antigen, a positive titre in dilutions of 1 16,000 for Lept icterohaemorrhagiae and 1 2,048 for Lept canicola was obtained This method was considered far more sensitive than the method previously employed and was used chiefly as confirmatory evidence of the infection An even later serological examination done with live organisms 78 days after admission showed a positive titre for Lept icterohaemorrhagae in a dilution of 1 8,000 and for Lept canicola in a dilution of 1 256

COMMENT

It has become apparent that leptospirosis is a much commoner disease in this country than has been supposed [5] Until recently there has been no effective specific treatment for it The mortality of the disease has ranged between 4% and 60% in various series, with an over-all mortality of 30% [6] Jaundice and nitrogen retention make the prognosis extremely grave [6] The patient in our report was critically ill and, in spite of treatment with penicillin, became progressively worse He was distinctly icteric, in profound uremia, and appeared moribund Within 24 hours after the administration of terramycin hydrochloride, the patient exhibited dramatic clinical improvement We realize that no definite conclusions can be drawn from such a single experience, but the pronounced sudden improvement in the clinical course of this patient after this drug was begun appears to be more than coincidental

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[3] Brainerd and others [1b] Lurie [1i]

[4] Gardner A D and Wylie, J A H Laboratory Diagnosis of Well's Disease Lancet 1 955 1946

[5] Sacks, M S The Problem of Leptospirosis Ann. Int. Med 33 481 1950 Ashe W F Pratt Thomas H R and Kumpe C W Well s Disease A Complete Review of American Literature and An Abstract of the World Literature 7 Case Reports Medicine 20 145 1941

[6] Bertucci E. A Jr Leptospirosis, Am. J M Sc 209:86 1945

BACTEROIDES ENDOCARDITIS

REPORT OF A CASE SUCCESSFULLY TREATED WITH TERRAMYCIN

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The organisms usually responsible for subacute bacterial endocarditis are of a low degree of invasiveness and are frequently or regularly present in the flora of the body cavities during health Nonhemolytic streptococci, enterococci, influenza bacilli, and coagulase-negative staphylococci are most commonly recovered from the blood in such patients Gram-negative, non-spore-forming, anaerobic bacilli of the genus Bacteroides are readily isolated from materials obtained from the nasopharynx, colon, and vagina in many persons It is well known that they may cause serious suppurative disease, but are a rare cause of subacute bacterial endocarditis[1]

This report describes a case in which a diagnosis of Bacteroides endocarditis was established, and in which therapy with terramycin was successful

REPORT OF CASE

Mrs A V was admitted to the hospital in January, 1950 for study of a febrile illness of nine months duration She had had rheumatic fever on two occasions (at the ages of 7 years and 13), but had otherwise been well and active

Her present illness began with the discovery of fever during a routine prenatal examination by her physician in May, 1949 She had then been pregnant for six months No clinical evidence of disease was discovered, and she felt quite well Her maximum temperature varied between 100 and 102 F daily, but she did not feel ill during the subsequent two months

A blood culture was obtained when she was admitted to the hospital in July, 1949, for delivery An organism was isolated, but details as to its nature are not available Penicillin was administered for one month in unknown dosage, followed by 1 gm daily of aureomycin for seven weeks Treatment was concluded about Oct 1, 1949

Since that time she had felt very well Serial blood cultures at fortnightly intervals were negative until Jan 22, 1950 when an anaerobic gram negative bacillus was recovered and she was admitted to Stanford University hospitals

On examination the temperature was 99 5 F rectally and the pulse rate was 90 per minute The heart was slightly enlarged and there were signs of aortic insufficiency *and mitral stenosis* The spleen was palpable No petechiae were seen Laboratory investigation revealed a hemoglobin value of 12 0 gm per 100 ml, red blood cell count of 4 050 000 per cubic millimeter and a total leukocyte count of 5,200 per cubic millimeter The erythrocyte sedimentation rate (Westergren) was 20 mm per hour The urine was normal Anaerobic gram negative bacilli of the genus Bacteroides were isolated from the blood The organism was inhibited by 1 0 γ of terramycin per milliliter and 10 γ of streptomycin per milliliter It grew in the presence of 1 0 unit of penicillin per milliliter

Terramycin therapy was begun on Feb 1, 1950, in a dose of 3 0 gm per day by mouth and continued at this level until March 10, 1950, when the dose was reduced to 2 0 gm per day The drug was discontinued on April 7, 1950 Total duration of treatment was 66 days, and the total dose of terramycin was 170 gm No toxic reaction of any kind referable to the administration of this large amount of terramycin was observed

Bacteroides bacilli were never again isolated from the blood after institution of this regimen The *erythrocyte sedimentation* rate was 4 mm per hour on Feb 24 A few conjunctival petechiae were seen during the first two weeks of treatment but not later

When last examined on Oct 1, 1950, twenty five weeks after the withdrawal of terramycin, the patient was well and without evidence of change in her cardiac signs or reduction of cardiac reserve The spleen was barely palpable The erythrocyte sedimentation rate (Westergren) was 4 mm per hour, and the blood was sterile

COMMENT

Generalized septic processes caused by Bacteroides are not common, and the most suitable antimicrobial agents for use in such infections have not been defined Penicillin and streptomycin have been believed to be of little value because of the high in vitro resistance of the organism to these substances[2] Successful therapeutic results associated with the use of sulfonamides[3] have been described There was recovery in a case of subacute bacterial endocarditis following the administration of sulfadiazine, streptomycin, and penicillin[4] Reports of the use of the newer antibiotics having broad antibacterial spectra have not come to my attention

In this case therapy with penicillin, followed by small doses of aureomycin, was ineffective The organism isolated from the blood was inhibited by small amounts of terramycin, and the infection was permanently eradicated when large amounts of this drug were administered for two months The complete absence of gastrointestinal or other toxicity was noteworthy The further trial of terramycin in Bacteroides infection is obviously indicated

SUMMARY

A case of subacute bacterial endocarditis caused by a member of the genus Bacteroides is described The infection was eradicated by the administration of large amounts of terramycin for two months

Sanford University Hospitals

From the Department of Medicine Stanford University School of Medicine

Terramycin used in this study was supplied through the courtesy of Dr Gladys L. Hobby Chas Pfizer & Co 11 Bartlet St. Brooklyn 6 N Y

This case was studied through the courtesy of Dr Winston W Benner

[1] Beigelman P M and Rantz, L. A Clinical Significance of Bacteroides Arch Int Med 84 605 (Oct.) 1949

[2] Foley G E. In Vitro Resistance of the Genus Bacteroides to Streptomycin Science 106:423 1947

[3] Beigelman and Rantz.[1] Smith W E and Ropes M W Bacteroides Infections Analysis Based on Review of Literature and Study of 20 Cases New England J Med 232:31 1945

[4] Cressy N L. Lahey W H and Kunkel P Streptomycin in the Treatment of Bacterial Endocarditis Report of 2 Cases New Fngland J Med 239:497 1948

INTESTINAL BLEEDING ASSOCIATED WITH ACETYLSALICYLIC ACID

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Serious toxic reactions to the salicylates are rare in relation to the widespread use of this group of drugs In the present case it was possible to establish a causal relationship between prolonged intestinal bleeding and the taking of acetylsalicylic acid Hypoprothrombinemia has been reported after ingestion of the salicylates, and this has been ascribed to the bishydroxycoumarin-like action of the salicylates[1] There is a report of thrombopenia

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From the departments of pharmacology and surgery Cornell University Medical College

[1] Smith P K Certain Aspects of the Pharmacology of the Salicylates J Pharmacol & Exper Therap 97 353 (Dec pt. 2) 1949

with purpura and death after ingestion of salicylates,[2] but clear proof is lacking that they were the cause of the disease

REPORT OF A CASE

The patient, an intelligent, well developed, otherwise healthy male, 74, had continuous intestinal bleeding of undetermined origin for eight years The symptoms were anemia and weakness Blood was always found in the stools sometimes there was bright red streaking of the stools, frequently there was sufficient blood to color the water in the toilet bowl deeply, and when blood was not visible it could be detected by chemical tests When the anemia was first noted, in 1942, the patient was thoroughly examined in a medical center in another city Blood was found in the stools A polyp was found at the rectosigmoid junction and was cauterized The bleeding and anemia continued The patient was given iron, and the hemoglobin rose to normal

In 1944 and again in 1945 he was examined in two medical centers in this city At the first examination, nothing but the anemia and blood in the stools was found, at the second, a small hiatus hernia was found at the cardiac end of the stomach In view of the otherwise normal observations, it was conjectured that ulceration of the mucosa of the hernial sac might be the cause of the bleeding It is to be noted that in the aforementioned examinations there was a complete x ray examination of the gastrointestinal tract, as well as direct examinations of the visible portions of the rectum and colon through the sigmoidoscope There is no record of platelet counts or prothrombin time determinations There were no other observations that had any bearing on the problems presented For the relief of the pain of osteoarthritis of the right knee, the patient for many years had been in the habit of taking acetylsalicylic acid (aspirin) in amounts of approximately 3 Gm daily

When there was no iron therapy, the hemoglobin would sink to levels ranging from 7 to 9 Gm, with the red blood cell count between 3½ and 5 million Treatment consisted of ferrous sulfate, in oral doses of from 1 to 1.5 Gm three times daily The diet was rich in vitamins and meat When the patient was placed on such a regimen, the hemoglobin soon rose, despite the continued bleeding When iron therapy was discontinued, the hemoglobin would fall and the weakness would appear After a few such experiences, the patient was given iron therapy on a permanent basis, and he accepted the intestinal bleeding as a permanent feature of his life Such a plan was followed satisfactorily and the patient continued in his business without any difficulties arising from the intestinal bleeding.

On Aug 12, 1949, he had an acute intestinal obstruction due to carcinoma for which the bowel was resected It was now assumed that this had been the cause of the bleeding and had somehow escaped detection No metastases were found at operation. During the patient s hospital stay acute prostatic obstruction developed and a prostatectomy was performed The prothrombin time was normal and hemostasis was not difficult during the operations The patient received five postoperative transfusions There was no blood in his stools during the hospital stay On his discharge, on Nov 5, 1949, the blood cell count was normal, there was no blood in the stools and the bowel was normal by direct and x ray examinations The patient was free of all symptoms other than pain in his knee He had taken no acetysalicylic acid in the hospital but on his return home the pain in his knee caused him to take it again He was seen again on Nov 23, 1949 There was intense pallor, weakness, dyspnea, edema of the ankles, and gross blood in the stools The hemoglobin was 6 5 Gm The bowel was reexamined, but no cause for the bleeding was found The dose of iron was increased but the hemoglobin did not rise above 9 Gm

Then, for the first time in the history of bleeding and anemia acetylsalicylic acid was considered as a possible etiological factor in the bleeding This might be an instance of a bishydroxycoumarin like effect of therapeutic doses of a salicylate An experiment was designed to test this possibility and was outlined to the patient He was most cooperative He kept a precise and detailed daily protocol, including a list of the drugs he took the time and number of stools (usually about three a day), and the result of a gross examination of each stool Because of the prolonged course of the experiment, it was not feasible to keep the patient on the constant meatless diet that examinations of the stools for occult blood would have required

The use of acetylsalicylic acid was to be discontinued If the bleeding stopped, after a period of about two weeks this drug was to be resumed and continued until blood reappeared in the stools This procedure was to be repeated several times At critical points, determinations were to be made of hemoglobin, red blood cells, prothrombin time, and platelets Arrangements were made so that when blood appeared in the stools these determinations could be made without delay The dose of iron remained constant throughout

The table summarizes the results About two to three days after the patient stopped taking acetylsalicylic acid, gross blood disappeared from the stools About two weeks after administration of the drug was resumed, blood was seen in the stools It will be noted in the table that there were three periods of intestinal bleeding, which correspond to ingestion of acetylsalicylic acid, and three periods without visible blood, which correspond to abstinence On June 2, 1950, there was no occult blood in the stools (this was the first negative determination for occult blood in eight years), hemoglobin was 13 5 Gm and iron therapy was discontinued The patient was without iron therapy for a significant period for the first time in eight years When he was last examined on Oct 28 1950, he appeared well and his hemoglobin was 13 7 Gm No blood had been observed in the stools since he had discontinued taking acetylsalicylic acid (April 10 1950) He received no medication for his joint pains preferring the pain to the problems attending the intestinal bleeding

Observations in Patient Studied

Dates *	Length of Period (Days)	Gross Blood in Stools	Hemoglobin (Gm)	Red Blood Cells (Millions)	Platelets (Thousands)	Prothrombin Time (Sec)
11/23—12 14 †	22	Present	6.5-9 0			
12/15—2/8 50	55	Absent	12.3	4 7		14
2/9—2/22 †	14	Absent				
2/23 †	1	Present	13 0	4.6	120	14
2/24—2 25	2	Present				
2/26—3 19	21	Absent	12.0	4 9	340	13 7
3/20—4 5 †	16	Absent				
4 6 †	1	Present	12.2	4 0	21	16 1
4/7—4/9	3	Present				
4/10—10 28	202	Absent	13 7	4 7	240	11 4

* Period covered November 1949—April 1950
† Acetylsalicylic acid given

Our data, unfortunately, only hint at a mechanism of the bleeding The hemoglobin and red blood count did not change significantly during the experimental period, but this is unquestionably due to the fact that acetylsalicylic acid ingestion was stopped and that the bleeding was not permitted to continue for more than a few days after it was discovered Before the experiment, the low hemoglobin and red blood cell count had developed after long periods of bleeding The prothrombin time was normal on all examinations, and it may be assumed that a bishydroxycoumarin-like action played no role in the bleeding There is the observation of a platelet count of 120,000 after a two week period of acetylsalicylic acid therapy, but there is another count of 215,000 after a similar period of administration of this drug One of the platelet counts when the drug was not taken was as high as 340,000, another was as low as 240,000 The possibility that the intestinal bleeding was associated with thrombopenia rests, therefore, on the single platelet count of 120,000

In only one report,[2] already mentioned, was thrombopenia ascribed to the salicylates It was a case of a patient with purpura and extensive hemorrhages, who had taken salicylates and who was not saved by splenectomy It was reasoned by the authors that, since in true idiopathic purpura splenectomy is usually effective, the failure in this case indicates that salicylate was the cause of the purpura While the thrombopenia is definite, the evidence for an etiological connection between it and salicylates is tenuous In the present case the acetylsalicylic acid is clearly the cause of the bleeding, but that it is also associated with thrombopenia is only suggested and not proved by the experiment.

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[2] Rappoport A E. Nixon C. E. and Barker W A Fatal Secondary Toxic Thrombocytopenic Purpura Due to Sodium Salicylate Report of a Case J Lab & Clin. Med 30 916 (Nov) 1945

SUMMARY

A case of intestinal bleeding for eight years is described During the eight year period, a polyp, hiatus hernia, and carcinoma of the colon were discovered, and each, when found, was thought to be the cause of the bleeding It is demonstrated, however, that acetylsalicylic acid (aspirin), which the patient had prescribed for himself, was the etiological agent in this case

1300 York Ave

CONTROL OF PULMONARY EMBOLI BY INFERIOR VENA CAVA LIGATION

REPORT OF A CASE

Gerald H Pratt, M D , New York

Indications for a vena cava ligation to prevent thromboembolism are few, but when these conditions exist, the results of this type of surgery are dramatic and life-saving It is my belief that once a clot large enough to occlude the pulmonary artery is present in a vein, a mechanical block between that clot and lung should not be delayed [1] It is admitted that anticoagulants may prevent propagation of clots, but, in the light of our present knowledge, we do not know such therapy can dissolve a clot which has already been formed [2] If a clot is present, therefore, in the large vessels, i e , the upper femorals, iliac veins, or vena cava, only by a physicial block in the pathway of clot movement can possible death be prevented This type of therapy is not used alone or to the exclusion of anticoagulants — anticoagulant therapy is always used in addition The following history is an illustration of complications sometimes seen by those who specialize in this type of work The patient described also presents an example of how some patients with this disease have been maltreated in the past

REPORT OF A CASE

A white American man, aged 41, was working in Texas when, in 1949, sudden pain developed in his right leg That day he had pain in his chest and subsequently coughed up some bloody sputum He was hospitalized locally for three days with an asymptomatic course and no specific therapy, and he was then permitted to return to his work There was a recurrence of the pain in his leg immediately, and more coughing of blood An x-ray of his chest was then taken, which showed at least two areas of pulmonary infarction. The therapy, at that time, consisted of transporting the patient to an airport, putting him on an airplane, and sending him back to his home in New Jersey

On his arrival home, he was hospitalized at the local hospital, and the right superficial femoral vein was ligated. He was also given 200 mg of bishydroxycoumarin (dicumarol®), and his prothrombin time rose to 62 sec (control, 19) The next night, he had another pulmonary embolism, and the left superficial femoral vein was then ligated The following day, the prothrombin level continued elevated The next day, there were severe dyspnea, cyanosis, and pain in his chest with hemoptysis He was then referred to my care in New York On his admission to a hospital in New York, there was some edema of the right leg with pain in the right popliteal space He had dilated 'sentinel veins" [2a] over the right tibia, and there were cyanosis, extensive dyspnea, and a questionable Homan s sign The patient had to sit up to get his breath There was persistent tenderness, also, in the right lower quadrant of the abdomen, and the patient stated he had been constipated since he had left Texas four days before On urinalysis, there were some red blood cells found in the urine In New York the prothrombin level was still elevated to 54

The problem, then, was one of a patient having repeated pulmonary emboli, even with a high prothrombin level and after superficial femoral ligations The clots thus were very high, or in the femoral profunda system It was decided to ligate the inferior vena cava at once. At that time, his prothrombin level still was 52 Because of the pain in the right lower quadrant, it was elected to go through the peritoneum for the vena cava ligation The abdominal contents were displaced upward, the retroperitoneum incised just above the bifurcation of the aorta, and the vena cava dissected free and ligated in continuity with No 2 nonabsorbable surgical sutures (silk), three sutures being placed about ⅛ in (0 32 cm) apart A right lumbar sympathectomy was performed at the same time There was no palpable clot in the vena cava at the operation site Upon closing the retroperitoneum, the appendix was delivered, and gangrenous appendicitis, with localized peritonitis, was discovered. The appendix was removed, and the patient's abdomen was closed without drainage

The patient immediately improved, the chest signs responded to antibiotics, the swelling in the right leg subsided, thereafter, and the part was warm and he had no further trouble with that leg Each time the patient started to walk, however, he would have severe pain in his left leg and that foot would blanch and go into spasm Sympathetic nerve blocks would relax this spasm each time It was evident that he was having reflex arterial spasm in the left leg One week thereafter, because of continuation of the symptoms, a retroperitoneal left lumbar sympathectomy was performed There was no further trouble in either leg, and the patient made an uneventful recovery The pathological report showed acute suppurative appendicitis with multiple abscesses in the wall The patient's prothrombin level remained above normal for approximately five days It was then maintained with small doses of bishydroxycoumarin thereafter for a period of two more weeks

COMMENT

This patient's history is detailed because it points up many facts needing emphasis

1 The lack of understanding of this thromboembolism problem which exists in the general medical field is shown by the fact that this patient was sent back to work three days after an embolism to his lung, and later was sent on a long transcontinental trip after a second one without therapy

2 The subsequent events emphasize the inadequacy of superficial femoral ligation to prevent further pulmonary emboli where large clots already exist [3]

From the Vascular Clinic of St Vincent s Hospital and New York University College of Medicine.

[1] Pratt. G H. Surgical Management of Vascular Diseases Philadelphia, Lea & Febiger 1949 p 357 Classification and Treatment of Varicose Post Thrombotic and Arterial Venous Problem, Bull. New York Acad. Med. **26**: 306-328 (May) 1950

[2] Marple C. D and Wright, I S Thromboembolic Conditions and Their Treatment with Anticoagulants Springfield Ill Charles C Thomas Publisher 1950 p 63

[2a] Pratt, G H. An Early Sign of Femoral Thrombosis J A. M. A. **140**: 476 (June) 1949

[3] Marple and Wright[2] Rottino A Boller R. and Pratt, G H Therapeutic Action of Muscle Adenylic Acid on Ulcers and Dermatitis Associated with Varicose or Phlebitic Veins Preliminary Report, Angiology **1** 194 (April) 1950

3 The extreme sensitivity of some patients to bishydroxycoumarin (dicumarol®) is demonstrated It proves that pulmonary emboli can occur if a large clot is already present, even with a persistently high anticoagulant therapeutic level (Causes for abnormal sensitivity to anticoagulants in this patient and in other patients are not discussed)

4 This case shows the development of acute appendicitis, which might readily have been missed by the usual retroperitoneal approach to the vena cava It emphasizes, again, the fact that any right lower quadrant pain in the abdomen, despite any other condition, must be considered to be caused by appendicitis until one has proved otherwise If the appendix is in situ, the proof should be by laparotomy

5 The control of multiple pulmonary emboli by vena cava ligation, when specifically indicated, is proved

6 The role of arterial spasm following major vessel occlusion is illustrated, as is its relief by sympathectomy on both the right and left sides [4] In retrospect, left lumbar sympathectomy should have been performed at the time of the vena cava ligation At the time of operation, however, with the pathological conditions present in the right leg only, it was thought that the extra operative time necessary to dissect out the left lumbar sympathetic chain was not indicated

7 The complexity of thromboembolism in certain instances is apparent

30 E 60th St

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[4] Pratt G H The Present Status of Sympathectomy in the Treatment of Vascular Diseases Angiology 1 9 (Feb) 1950 Surgical Management of the Post Thrombotic Syndrome Ann West Med. & Surg 4 82 (Feb) 1950

COUNCIL ON PHARMACY AND CHEMISTRY

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies A copy of the rules on which the Council bases its action will be sent on application

R. T STORMONT, M D., *Secretary*

Aminophylline-U.S.P (See New and Nonofficial Remedies 1951, p 297)

Tablets Aminophylline 0 1 gm and 0 2 gm Meyer Chemical Company, Detroit

Amphetamine Sulfate-U.S P (See New and Nonofficial Remedies 1951, p 188)

Tablets Amphetamine Sulfate 5 mg and 10 mg Physicians' Drug and Supply Company, Philadelphia

Dehydrocholic Acid-N F (See New and Nonofficial Remedies 1951, p 314)

Tablets Dehydrocholic Acid 0 24 gm S E Massengill Company, Bristol Tenn

Dienestrol (See New and Nonofficial Remedies 1951, p 340)

Tablets Dienestrol 10 mg White Laboratories, Inc., Newark, N J

Isopropylarterenol Hydrochloride (See New and Nonofficial Remedies 1951, p 191)

Sublingual Tablets Aludrine Hydrochloride 5 mg and 10 mg Eli Lilly & Company, Indianapolis

Mannitol Hexanitrate (See New and Nonofficial Remedies 1951, p 232)

Tablets Mannitol Hexanitrate 30 mg Keith-Victor Pharmacal Company, St Louis

Mephenesin (See New and Nonofficial Remedies 1951, p 165)

Tablets Mephenesin 0 25 gm. and 0 5 gm Premo Pharmaceutical Laboratories, Inc., South Hackensack, N J

Mersalyl and Theophylline Injection U.S P (See New and Nonofficial Remedies 1951, p 295)

Solution Mersalyl and Theophylline 2 cc ampuls A solution containing 0 1 gm mersalyl (equivalent to 39 6 mg mercury) and 50 mg of theophylline in each cubic centimeter S E Massengill Company, Bristol, Tenn

Methamphetamine Hydrochloride-U.S P (See New and Nonofficial Remedies 1951, p 193)

Tablets Semoxydrine Hydrochloride 2 5 mg , 5 0 mg and 7 5 mg S E Massengill Company, Bristol, Tenn

Penicillin for Oral or Sublingual Administration (See New and Nonofficial Remedies 1951, p 122)

Flavored Tablets Crystalline Potassium Penicillin G (Buffered) 50 000 units Buffered with 0 3 gm calcium carbonate Rexall Drug Company, Los Angeles

Pyrilamine Maleate (Formerly Pyranisamine Maleate See New and Nonofficial Remedies 1951, p 13)

Tablets Pyrilamine Maleate 25 mg Paul B Elder Company, Bryan, Ohio

Sodium Ascorbate Injection U.S P (See New and Nonofficial Remedies 1951, p 432)

Solution Sodium Ascorbate 2 cc ampuls A solution containing the equivalent of 50 mg. of ascorbic acid as sodium ascorbate in each cubic centimeter 5 cc and 10 cc vials A solution containing the equivalent of 100 mg of ascorbic acid as sodium ascorbate in each cubic centimeter The Smith Dorsey Company, Lincoln, Neb

Dia Men-Sulfonamides (See New and Nonofficial Remedies 1951, p 101)

Suspension Bisulfon with Sodium Lactate 480 cc and 3 84 liter bottles A suspension containing 50 mg sulfadiazine and 50 mg sulfamerazine and 0 1 gm of sodium lactate in each cubic centimeter Veltex Company, Birmingham, Ala

Testosterone Propionate U.S P (See New and Nonofficial Remedies 1951, p 363)

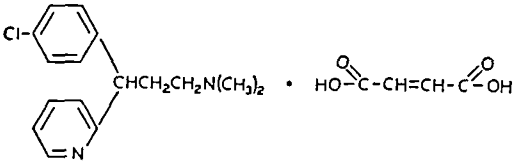
Solution Testosterone Propionate in Oil 10 cc vials A solution containing 50 mg. of testosterone propionate in each cubic centimeter Preserved with 0 5 per cent chlorobutanol Metropolitan Laboratories, Inc , Oyster Bay, N Y

Tetracaine Hydrochloride-U.S P (See New and Nonofficial Remedies 1951, p 40)

Pontocaine Hydrochloride Niphanoid® for Spinal Anesthesia Ampuls containing 15 mg of tetracaine hydrochloride Winthrop-Stearns Inc., New York.

Solution Pontocaine Hydrochloride for Caudal Anesthesia 100 cc bottles An isotonic solution containing 1.5 mg. of tetracaine hydrochloride in each cubic centimeter Winthrop Stearns, Inc New York

Chlorprophenpyridamine Maleate —Chlor-Trimeton Maleate (Schering) —$C_{16}H_{19}ClN_2$ $C_4H_4O_4$ —M W 390 86 —1-(*p*-Chloro phenyl) 1-(2 pyridyl) 3-dimethylaminopropane maleate —The structural formula of chlorprophenpyridamine maleate may be represented as follows



Actions and Uses —Chlorprophenpyridamine maleate has good therapeutic efficacy and low incidence of side effects Its low dosage does not appear to give it any particular therapeutic advantage over other antihistamines

Dosage —The average adult dose is 2 to 4 mg

Tests and Standards —

Physical Properties Chlorprophenpyridamine maleate is a white crystalline solid which melts between 130 0 and 135 One part of chlorphenpyridamine maleate is soluble in 3 4 parts of water in 10 parts of alcohol and in 10 parts of chloroform and is slightly soluble in benzene and ether The pH of a 1% solution is about 4 8

Identity Tests Dip a clean copper wire in a paste made by mixing about 50 mg of chlorprophenpyridamine maleate with a few drops of water and hold it in the nonluminous portion of the flame of a Bunsen burner the flame turns green *(presence of chlorine and distinction from prophenpyridamine)*

Dissolve about 0 5 gm of chlorprophenpyridamine maleate in 10 ml of water Make the solution alkaline with sodium hydroxide T S and extract the liberated base with 20 ml of chloroform Add 20 ml of a saturated solution of picric acid in alcohol (about 60 mg /ml of alcohol) previously heated to 65 Digest the reaction mixture at 65 for about 20 min add 20 ml of alcohol and keep at 65 for about 10 min longer A fine yellow crystalline precipitate forms Filter the mixture and dry the crystals in a vacuum for 4 hours and then at 105 for 4 hours the yellow crystalline picrate obtained melts between 197 and 200

A 0 003 per cent solution prepared as described later in the assay for chlorprophenpyridamine maleate exhibits an ultraviolet absorption maximum at 2 620 A [specific absorbancy E(1% 1 cm) is 143 ± 3] an inflection at about 2 680 A and a minimum at about 2 430 A

Purity Tests Dissolve about 0 3 gm of chlorprophenpyridamine maleate in 2 ml of alcohol add 5 drops of chloroform and 0 5 ml of 50% potassium hydroxide and heat a red color develops but no odor of isonitriles *(absence of primary amines)*

Dry about 1 gm of chlorprophenpyridamine maleate accurately weighed for 4 hours at 105 the loss in weight is not more than 0 5%

Ignite about 0.5 gm of chlorprophenpyridamine maleate accurately weighed the residue is not more than 0 15%

Assay (Chlorprophenpyridamine Maleate) Transfer 0.3 gm of chlorprophenpyridamine maleate accurately weighed to a 100 ml volumetric flask and dilute to the mark with water Mix thoroughly and transfer 10 ml of the solution to another 100 ml volumetric flask Dilute to 100 ml with water mix well and transfer 10 ml of the solution to a third 100 ml volumetric flask and dilute to 100 ml with water The final solution (0 003%) exhibits an ultraviolet absorption maxmum at 2 620 A [specific absorbancy E(1% 1 cm) 143 ± 3]

(Nitrogen) Transfer about 0 15 gm of chlorprophenpyridamine maleate accurately weighed to a semi micro Kjeldahl flask and digest it for 4 hours with 7 ml of sulfuric acid 2 7 gm of potassium sulfate and 0.3 gm of mercuric oxide Dilute the clear solution to 15 ml with water make it alkaline with 40% sodium hydroxide and then add 10 ml of 40% sodium thiosulfate Distil the ammonia into 20 ml of 4% boric acid Using a mixed indicator (1 part of methyl red T S 5 parts of bromocresol green T S) titrate the liberated ammonia with 0 05 *N* sulfuric acid Each milliliter of 0 05 *N* sulfuric acid is equivalent to 0 0007004 gm of nitrogen and to 0 01954 gm of chlorprophenpyridamine maleate The amount of nitrogen present is not less than 7 0% nor more than 7 4% equivalent to not less than 97 5% nor more than 102.5% of chlorprophenpyridamine maleate

Dosage Forms of Chlorprophenpyridamine Maleate

TABLETS *Identity Tests* Dip a clean copper wire in a paste made by mixing about 0 1 gm. of the powdered tablets with a few drops of water and hold it in the nonluminous portion of the flame of a Bunsen burner the flame turns green *(presence of chlorine and distinction from prophenpyridamine)*

Crush 75 tablets suspend the powder in 40 ml of water make the suspension alkaline with sodium hydroxide T S and extract the liberated base with 20 ml of chloroform Proceed as directed in the identity tests for chlorprophenpyridamine maleate starting with Add 20 ml of a saturated solution of picric acid in alcohol

Assay (Chlorprophenpyridamine Maleate) Weigh 20 tablets and grind them Accurately weigh the equivalent of 0 004 gm. of chlorprophenpyridamine maleate transfer it to a 100 ml volumetric flask and dilute to the mark with water Mix thoroughly filter the mixture through a dry filter paper discarding the first 25 ml of filtrate and measure the optical density in a 1 cm quartz cell with a spectrophotometer at 2 620 A Calculate the amount of chlorprophenpyridamine maleate from the specific absorbancy E (1% 1 cm.) = 143 ± 3 The amount of chlorprophenpyridamine maleate present is not less than 90 0% nor more than 110 0% of the labeled amount

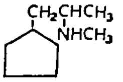
SYRUP *Identity Tests* Make 200 ml of the syrup alkaline with sodium hydroxide T S and extract the liberated base with three 20 ml portions of chloroform Combine the extracts filter them and evaporate the solvent Dip a clean copper wire in a paste made by mixing about 10 mg of the residue obtained with a drop of water and hold it in the nonluminous portion of the flame of a Bunsen burner the flame turns green *(presence of chlorine and distinction from prophenpyridamine)* With the rest of the residue proceed as directed in the identity tests in the monograph for Chlorprophenpyridamine Maleate starting with Add 20 ml of a saturated solution of picric acid in alcohol

Assay (Chlorprophenpyridamine Maleate) Evaporate 200 ml of syrup to approximately 150 ml on a steam bath Cool and extract the residue with two 100 ml portions of petroleum ether and discard the petroleum ether Bring the residual solution to a pH of 11 with 20% sodium hydroxide and saturate it with sodium chloride Extract the liberated base with seven 35 ml portions of petroleum ether Combine the extracts and wash them with two 5 ml portions of saturated sodium chloride (about 0 4 gm per milliliter of water) Combine the sodium chloride washes extract them with 10 ml of petroleum ether and add this extract to the main portion Evaporate the petroleum ether dissolve the residue in 25 ml of alcohol and add exactly 35 ml of 0 02 *N* sulfuric acid Back titrate with 0 02 *N* sodium hydroxide to an endpoint of *pH 6 8* using chlorophenol red or some other suitable indicator Each milliliter of 0 02 *N* sulfuric acid consumed is equivalent to 0 007817 gm of chlorprophenpyridamine maleate The amount of chlorprophenpyridamine present is not less than 90 0% nor more than 110 0% of the labeled amount.

Syrup Chlor Trimeton Maleate 473 cc bottles A flavored solution containing 0 5 mg of chlorprophenpyridamine in each cubic centimeter Schering Corporation, Bloomfield, N J

Tablets Chlor Trimeton Maleate 4 mg Schering Corporation, Bloomfield, N J

Cyclopentamine Hydrochloride —Clopane Hydrochloride (Lilly) —$C_9H_{19}N$ HCl —M W 177 72 —N,α Dimethylcyclopentaneethylamine hydrochloride —1-Cyclopentyl 2 methylaminopropane hydrochloride —The structural formula of cyclopentamine hydrochloride may be represented as follows



Actions and Uses —Cyclopentamine hydrochloride has the actions and uses of sympathomimetic amines It produces systemic pressor and local vasoconstrictor effects similar to those of ephedrine but, unlike ephedrine, produces only slight cerebral excitation Given orally it is more effective than ephedrine

The drug is administered by injection as an adjunct to other measures for maintaining blood pressure in operative procedures and in types of cardiovascular collapse where sympathomimetic drugs are not contraindicated It is also useful by topical application for the temporary relief of nasal congestion Its local vasoconstrictor action does not appreciably interfere with ciliary movements

Like other sympathomimetic agents, cyclopentamine hydrochloride should not be injected in patients with hyperthyroidism and should be used with caution in patients with hypertension Too frequent topical application should also be avoided to prevent such side effects as increased blood pressure nervousness, nausea and dizziness, particularly in patients susceptible to vasoconstrictor agents

Dosage —As a nasal decongestant, a 0 5% solution is applied topically by means of dropper, spray, or tampon Drops should be instilled with the head in the lateral head low position, when stinging is encountered the solution may be diluted with isotonic sodium chloride solution

As a pressor agent to maintain blood pressure during spinal anesthesia or surgery, a dose of 25 mg in 1 cc of solution is recommended It is injected intramuscularly just prior to administration of the anesthetic, with subsequent fractional doses as needed To combat a rapid fall in blood pressure the drug may be administered intravenously, but by this route the drug must be injected very slowly and in doses not exceeding 5 to 10 mg in order that the full effect of each dose may be determined

Tests and Standards —

Cyclopentamine hydrochloride is a white, odorless crystalline powder with a mild characteristic odor and a bitter taste It melts between 113 0 and 116 0 One part of cyclopentamine hydrochloride is soluble in 1 0 part of water in 1 8 parts of alcohol, in 23 8 parts of benzene and in 1.3 parts of chloroform and is slightly soluble in ether The pH of a 1% solution is about 6 2.

Identity Tests Add 0.5 gm of sodium nitrite to a solution of about 50 mg of cyclopentamine hydrochloride in 2 ml. of water and boil gently about 30 sec A turbidity may develop Cool and add about 1.5 ml of hydrochloric acid dropwise with additional cooling, if necessary a yellowish orange oily material separates. Add more hydrochloric acid dropwise with agitation until the oily layer disappears and a white precipitate forms Decant the supernatant liquid and add about 5 ml of water the precipitate dissolves *(presence of a secondary amine)*

Dissolve about 0 5 gm of cyclopentamine hydrochloride in 10 ml of water and add 0 5 ml of diluted nitric acid and 1 ml. of silver nitrate T S a white precipitate forms which dissolves in 10 ml. of ammonium hydroxide T S *(presence of chloride)*

Dissolve about 0 5 gm of cyclopentamine hydrochloride in 5 ml of diluted sulfuric acid and 20 ml of water and add about 1 gm of potassium cyanate. Heat on a steam bath for 1 hour cool and filter Dissolve the residue in 25 ml of boiling water filter while hot, cool and again filter Recrystallize the precipitate from boiling water and dry it at 80 for 4 hours the white crystals melt between 126 0 and 129 0

Purity Tests Dissolve about 0 3 gm. of cyclopentamine hydrochloride in 2 ml of water add 5 drops of chloroform 2 ml of alcohol and 0 5 ml of 50% potassium hydroxide and heat no odor of isonitriles is obtained *(absence of primary amines)*

Dry about 1 gm of cyclopentamine hydrochloride accurately weighed for 3 hours at 80° the loss in weight is not more than 0 4%

Ignite about 1 gm of cyclopentamine hydrochloride accurately weighed the residue is not more than 0 05%

Assay (Cyclopentamine Hydrochloride) Transfer about 0.25 gm of cyclopentamine hydrochloride accurately weighed to a 500 ml Kjeldahl flask Add 200 ml of water and a few boiling stones. Connect the flask with a suitable condenser and add 50 ml of 50% sodium hydroxide Distil the liberated base into a 250 ml Erlenmeyer flask containing exactly 40 ml of 0.05 *N* hydrochloric acid (equivalent to 100 ml of 0 02 *N* hydrochloric acid) keeping the tip of the condenser beneath the surface of the acid during the distillation. Collect at least 150 ml of distillate cool if necessary, and titrate the excess acid with 0 02 *N* sodium hydroxide using methyl red T S as an indicator Run a blank determination with the same quantities of reagents and in the same manner and make any necessary corrections Each milliliter of 0 02 *N* hydrochloric acid consumed is equivalent to 0 003554 gm of cyclopentamine hydrochloride The amount of cyclopentamine hydrochloride present is not less than 98 0% nor more than 102 0%

Dosage Forms of Cyclopentamine Hydrochloride

SOLUTION *Identity Tests* Make alkaline with sodium hydroxide T S a volume of solution equivalent to about 50 mg of cyclopentamine hydrochloride, extract the liberated base with 20 ml of ether and evaporate the ether on a steam bath Dissolve the residue in 2 ml of water and add 5 drops of diluted hydrochloric acid Add 0 5 gm of sodium nitrite and boil gently about 30 sec A turbidity may develop Proceed as directed in the identity tests in the monograph for Cyclopentamine Hydrochloride starting with, Cool and add about 1 5 ml of hydrochloric acid dropwise '

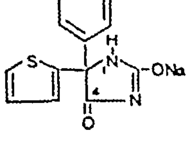
Make alkaline with sodium hydroxide T S a volume of solution equivalent to about 0.5 gm of cyclopentamine hydrochloride extract the liberated base with 35 ml of ether and evaporate the ether on a steam bath Dissolve the residue in 5 ml of diluted sulfuric acid and 20 ml of water and add about 1 gm. of potassium cyanate Proceed as directed in the identity tests in the monograph for Cyclopentamine Hydrochloride starting with Heat on a steam bath for 1 hour

Assay (Cyclopentamine Hydrochloride) Transfer a portion of the solution accurately measured equivalent to about 0.25 gm. of cyclopentamine hydrochloride to a 500 ml Kjeldahl flask Proceed as directed in the assay in monograph for Cyclopentamine Hydrochloride starting with Add 200 ml of water The amount of cyclopentamine hydrochloride present is not less than 95 0% nor more than 105 0% of the labeled amount

Solution Clopane Hydrochloride 1 cc ampuls A solution containing 25 mg of cyclopentamine hydrochloride in each cubic centimeter Eli Lilly & Company, Indianapolis

Topical Solution Clopane Hydrochloride 0.5% 30 cc 475 cc and 3 78 liter bottles An isotonic solution containing 5 mg of cyclopentamine hydrochloride in each cubic centimeter Preserved with phenylmercuric nitrate 1 50,000 Eli Lilly & Company, Indianapolis

Phethenylate Sodium—Thiantoin Sodium (Lilly)—Sodium 5-phenyl 5 (2 thienyl)hydantoinate — $C_{13}H_9N_2NaO_2S$ — M W 280 28—The structural formula for phethenylate sodium may be represented as follows



Actions and Uses—Phethenylate sodium is a hydantoin derivative with pronounced anticonvulsant activity It shares the antiepileptic action of other hydantoin compounds but differs in that it may be used to control petit mal as well as grand mal epilepsy and psychomotor seizures Hypertrophic gingivitis and dermatitis medicamentosa have been observed in a small percentage of cases treated These effects may require temporary withdrawal of the drug Development of vertigo, ataxia, or disequilibrium are indications for immediate cessation of therapy

The rare occurrence of severe blood dyscrasias such as leukopenia and thrombocytopenia should be anticipated by blood studies made periodically to permit early withdrawal of the drug if necessary Patients should be carefully watched for symptoms of agranulocytic angina or hemolytic anemia

Dosage—The dosage varies according to the needs of the patients, it should be adjusted to the minimum necessary to control seizures For the majority of adults, 0 13 gm two to four times daily is usually adequate Larger doses may sometimes be required The optimal dose is best determined by starting with 0 13 gm once or twice daily If toxic manifestations develop the dose should be reduced, supplemented by adding another drug or replaced completely by other agents indicated by the circumstances in each case Specific dosages for children cannot be given because they are determined according to clinical effects rather than weight Transition from anticonvulsant drugs, including phenobarbital, should be made gradually, with some overlapping in dosage to avoid increase in seizures when used in combination with phenobarbital or similar agents, smaller doses of both drugs are required

Tests and Standards—

Physical Properties Phethenylate sodium is a white odorless hygroscopic microcrystalline powder On exposure to air it gradually absorbs carbon dioxide with a corresponding liberation of 5-phenyl 5-thienyl hydantoin In aqueous solution it gradually dissociates One part of phethenylate sodium is soluble in 2 0 parts of water and in 5 0 parts of alcohol It is very slightly soluble in ether and is practically insoluble in benzene and chloroform The pH of a 1% solution is about 10 0

Identity Tests Heat gently about 1 gm. of phethenylate sodium in a platinum dish with 1 ml of sulfuric acid until no more fumes of sulfur trioxide are evolved The residue obtained responds to tests for sodium in *U S P XIV* p 724

To a dispersion of about 20 mg of phethenylate sodium in 3 ml of thiophene-free benzene add a solution of about 10 mg. of isatin in 1 ml of sulfuric acid and shake vigorously for about 1 min. the acid layer becomes green to dark green and turns blue after about 1 hour Run a blank on the reagents no color develops in the acid layer *(The test proves the presence of thiophene and distinguishes phethenylate sodium from diphenylhydantoin sodium)*

Dissolve about 0 5 gm of phethenylate sodium in 10 ml of water and add 5 ml of diluted hydrochloric acid a white precipitate forms Filter the mixture wash the precipitate well with cold water and dry it at 105 for 4 hours the phethenylate formed melts between 251 and 259°

Purity Tests Determine the heavy metals content (*U S P XIV* p 717) using 0.5 gm of phethenylate sodium in 25 ml of water no more turbidity develops than corresponds to 30 ppm of lead

Dry about 1 gm. of phethenylate sodium accurately weighed for 24 hours at 105 the loss in weight is not more than 1 5%

Assay (Phethenylate) Dissolve about 0.3 gm of phethenylate sodium accurately weighed in a mixture of 50 ml of water and 10 ml of diluted hydrochloric acid Extract the solution with one 100 ml portion and four 25 ml portions of ether Evaporate the combined ether extracts dry the residue at 105° for 4 hours, and weigh Each gram of phethenylate present is equivalent to 1 085 gm of phethenylate sodium The amount of phethenylate sodium present is not less than 97 0% nor more than 103 0%

(Nitrogen) Carry out a Kjeldahl or a semi-micro Kjeldahl determination as directed in *U S P XIV* p 740 The amount of nitrogen present is not less than 9 7% nor more than 10 3% equivalent to not less than 97 0% nor more than 103 0% of phethenylate sodium

Dosage Forms of Phethenylate Sodium

CAPSULES *Identity Tests* Ignite the contents of 2 capsules The residue obtained responds to tests for sodium in *U S P XIV* p 724

The phethenylate isolated in the assay described later melts between 251 and 259 and in the test for thiophene as described in the identity tests in the monograph for Phethenylate Sodium gives a stable brown green color in the acid layer after 30 min

Assay (Phethenylate) Accurately weigh the contents of 20 capsules and transfer them to a 250 ml beaker Place the emptied capsules in another beaker add sufficient alcohol to cover them completely and let them stand for 30 min with frequent stirring Filter the solution into the beaker containing the contents of the capsules and wash the capsules and filter well with alcohol Evaporate the liquid nearly to dryness on a steam bath and dissolve the residue in 45 ml of water and 5 ml of sodium hydroxide T.S Transfer the solution to a 200 ml volumetric flask dilute to the mark with water and mix thoroughly Filter the mixture through a dry filter paper discarding the first 25 ml of filtrate and transfer an aliquot equivalent to 0.3 gm of phethenylate sodium to a separatory funnel Dilute with water to make 50 ml and add 10 ml of diluted hydrochloric acid Extract the solution with one 100 ml and four 25 ml portions of ether Evaporate the combined ether extracts dry the residue at 105 for 4 hours and weigh Each gram of phethenylate is equivalent to 1 085 gm of phethenylate sodium The amount of phethenylate sodium present is not less than 93 0% nor more than 107 0% of the labeled amount

Pulvules Thiantoin Sodium 0 13 gm and 0 26 gm Eli Lilly & Company Indianapolis

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

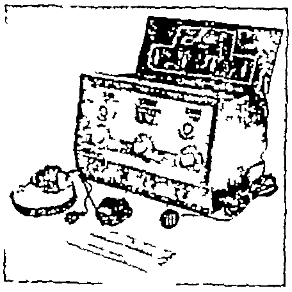
The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports

RALPH E DE FOREST, M D , *Secretary*

MAICO AUDIOMETER, MODEL H 1, ACCEPTED

Manufacturer The Maico Company, Inc , 21 North Third St , Minneapolis 1

The Maico Audiometer, Model H-1, is a pure tone audiometer for diagnostic purposes Unpacked, it measures 23 by 44 by 26 cm (9 1/16 by 17 1/8 by 10 5/16 in) and weighs 10 45 kg (23 lb) Packed for shipment it measures 36 by 50 by 36 cm (14 by 19½ by 14 in) and weighs 16 8 kg (37 lb) This shipping weight includes the following accessories 2 air receiver assemblies, 1 headband, 1 bone conductor assembly, 1 microphone assembly, 1 patient signal assembly, 100 audiogram charts, 1 dust cover, 1 operational manual, and 1 calculator for determining percentage of hearing loss The foreign shipping weight is 27 7 kg The device operates on 60 cycle alternating current at 110 to 120 volts but can be had also in forms using 25 cycle current and 220 to 240 volts It draws 40 watts of power



Maico Audiometer Model H 1

Evidence was obtained from an acceptable source that the device was of sound construction, that it performed as represented by the manufacturer, and that it satisfied the published minimum requirements of the Council for the acceptance of pure tone audiometers The Council on Physical Medicine and Rehabilitation voted to include the Maico Audiometer, Model H-1, in its list of accepted devices

ZENITH HEARING AID, MODEL "ROYAL," ACCEPTED

Manufacturer *Zenith Radio Corporation, 5801 West Dickens Ave , Chicago 39*

The Zenith Hearing Aid, Model 'Royal," is an electrical instrument conventional in shape, size, and general design The size, excluding clothing clips, is 77 by 59 by 22 mm The weight without batteries is 107 gm The batteries add 40 gm , and the cord and receiver weigh an additional 9 gm The A battery is a 1 25 volt mercury cell, the B battery is a 22 5 volt zinc-carbon battery

Zenith Hearing Aid Model Royal

Evidence from sources acceptable to the Council showed that this instrument was sound in construction and satisfactory in operation, and that it met the published minimum requirements of the Council The Council on Physical Medicine and Rehabilitation voted to include the Zenith Hearing Aid, Model Royal," in its list of accepted devices

TELEX HEARING AID, MODEL 400, ACCEPTED

Manufacturer Telex, Inc., Telex Park, Minneapolis 1

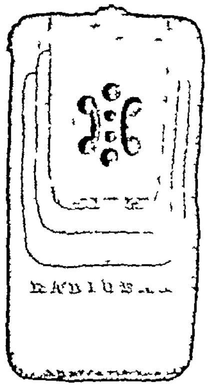
The Telex Hearing Aid, Model 400, is an electrical instrument of conventional design and construction except that it is intended for those who need a high acoustic gain for severe losses of hearing An added feature is a low drain adjustment" which reduces the drain on the B battery to above one half by sacrificing about 2 decibels of maximum power output The size, excluding switches, clips, etc , is 82 by 59 by 18 mm The weight without batteries, ear piece, or cord is 110 gm With batteries the weight is 177 gm

Evidence from sources acceptable to the Council indicated that this device was of good construction and performed as represented by the manufacturer The Council on Physical Medicine and Rehabilitation voted to include the Telex Hearing Aid, Model 400, in its list of accepted devices

RADIOEAR HEARING AID, MODEL 72, ACCEPTED

Manufacturer E A Myers & Sons, 306 Beverly Rd , Mount Lebanon, Pittsburgh 16

The Radioear Hearing Aid, Model 72, is a conventional electric hearing aid distinguished by especially high acoustic output with low distortion, a magnetic microphone, an inductive pickup ('Phonemaster) for use in telephoning, and certain internal and external arrangements for securing tone control Without clothing clip it measures 114 by 63 by 27 mm Without batteries it weighs 162 gm , with them it weighs 208 gm The cord and receiver together weigh 11 5 gm , and the bone conduction receiver with headband add 27 gm



Radioear Hearing Aid, Model 72

Evidence of good construction and satisfactory performance was obtained from sources acceptable to the Council The Council on Physical Medicine and Rehabilitation voted to include the Radioear Hearing Aid, Model 72, in its list of accepted devices

MILLER ELECTRO-SCALPEL, MODEL 10V, ACCEPTED

Manufacturer Miller Surgical Company, 2449 North Pulaski Rd , Chicago 39

The Miller Electro Scalpel, Model 10V, is a generator of high frequency electromagnetic radiation (frequency 3000 kilo cycles, corresponding to a wavelength of 100 meters) designed for use in electro-cutting and electro-coagulation in the office The firm states that no claim is made that this unit will stop all bleeders '

The device, unpacked, measures 24 (height) by 29 by 22 cm (9½ by 11⅜ by 8¾ in) and weighs 7 kg (16½ lb) Packed for shipment it measures 35 5 by 35 5 by 35 5 cm (14 by 14 by 14 in) and weighs 10 4 kg (23 lb) The shipping weight includes the following accessories ground cord and plate, foot switch and line cord, conization electrode, striping electrode, heavy duty needle, half-inch loop electrode, diamond loop electrode, straight spatula electrode, medium ball electrode, diagnostic cord, and two handles For operation, the apparatus requires a source of 60 cycle alternating current at 120 volts, and it draws 250 watts of power

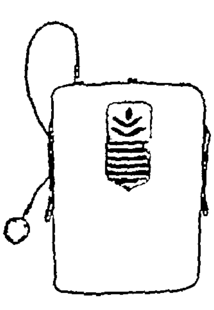
The Council obtained evidence indicating that the apparatus was well constructed and performed satisfactorily in office procedures when used as intended by the manufacturer The Council on Physical Medicine and Rehabilitation voted to include the Miller Electro Scalpel, Model 10V, in its list of accepted devices

AUDIVOX, MODEL SUPER 67, ACCEPTED

Manufacturer Audivox, Inc , 259 West 14 St , New York 11

The Audivox, Model Super 67, is a conventional electric hearing aid with magnetic receiver Excluding the clips and similar projections, the size is 87 by 63 by 22 mm The weight without batteries, receiver, or cord is 119 gm With batteries the weight is 166 gm

Evidence of satisfactory construction and operation was obtained from sources acceptable to the Council The Council on Physical Medicine and Rehabilitation voted to include the Audivox, Model Super 67, in its list of accepted devices



Audivox Hearing Aid Model Super 67

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

FIFTY-FIRST ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., Francis R. Manlove, M.D., and Anne Tipner

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Introduction

This is the fifty-first annual report on medical education in the United States and Canada compiled by the Council on Medical Education and Hospitals of the American Medical Association. It covers the period from July 1, 1950, to June 30, 1951, and, as has been customary, presents data and statistics compiled from official sources on medical schools, students, graduates and other important topics. Several items in this year's report merit special attention.

The significant and continuing increase in the production of physicians, evident during recent years, continues. The 6,135 physicians graduated during 1950-1951 is the largest number ever graduated from American schools except for 1947, when, with termination of the accelerated program, several schools graduated more than one class. All records for student enrolment were again broken. More than 26,000 students were enrolled in the 79 medical and basic science schools of the United States, representing an increase of 1,088, or 4.1%, over the total reported for last year. The largest freshman class in the history of the approved schools, totalling 7,182 students is reported and estimates indicate that the 1951 freshman class will total about 7,400 students.

Significant progress is being made toward resolving the financial problems of the medical schools. Funds available to the schools during 1951-1952 will total approximately $109,600,000, which represents an increase of more than 36 million dollars in the past four years. In addition to the usual sources of funds, the schools this year are receiving grants from the National Fund for Medical Education and the American Medical Education Foundation. However, serious financial problems remain for a number of schools.

The outbreak of hostilities in Korea, attended by partial mobilization has posed new problems for the medical schools. The Joint Committee on Medical Education in Time of National Emergency, formed in June 1950, has been active in seeking solutions to these problems and has worked closely with many governmental agencies. Among the important activities of the Committee this year were preparation of recommendations to the National Security Resources Board, publication of a booklet entitled "Suggestions for Supplementing the Medical Curriculum in Time of National Emergency," and testimony in relation to Selective Service and Universal Military Training given before the Senate Armed Services Committee and the National Security Training Commission.

Field work by the Survey of Medical Education, conducted under the joint sponsorship of the Council on Medical Education and Hospitals and the Association of American Medical Colleges, was completed in June, 1951. The Committee for the Survey of Medical Education is now writing its report and hopes to have it ready for distribution by the spring of 1952.

Several trends indicating changes in the composition of the student body in medicine are revealed by the statistics with respect to the percentage of veterans and women entering medical school and by an analysis of the college records of the 1951 freshman class. A marked drop in the number of veterans, a slight reduction in the number of women and a doubling of the number of students with "C" averages in college are reported.

The section of the report dealing with postgraduate education discloses that there was a marked reduction in attendance at postgraduate courses during the past year.

The requirements of the various American Boards in the specialties usually included in this report will be presented this year in the Internship and Residency Number of THE JOURNAL which is scheduled for publication Sept. 29, 1951.

The data published in the Educational Number are obtained from official reports. The Council and THE JOURNAL express their appreciation to the officers of the medical schools, hospitals and other institutions and agencies whose cordial and valuable cooperation makes possible the compilation and presentation of this body of fundamental information which is consulted each year by many individuals, organizations, and governmental agencies interested in medical education in the United States and Canada

Medical Education and National Defense

The problem of formulating a sound program for the conduct of medical education during war time has been the subject of studies by the Council on Medical Education and Hospitals and the Association of American Medical Colleges since the end of World War II The outbreak of hostilities in Korea, with its attendant partial mobilization, posed new problems for the medical schools To the already insistent demand for an expansion of facilities and faculties, which would increase production of physicians for the civilian population, was added the necessity of supplying adequate medical manpower for the greatly expanded armed forces

As reported in last year's Educational Number, two days after the beginning of the Korean conflict, the Executive Council of the Association of American Medical Colleges and the Council on Medical Education and Hospitals formed a Joint Committee on Medical Education in Time of National Emergency This committee represents both organizations in discussions with representatives of government agencies and other groups, on problems in medical education related to the present emergency and other efforts to develop a program of national defense It also maintains liaison with other professional and educational organizations which are concerned with similar problems Members of the committee are Drs Stockton Kimball, Chairman, Joseph C Hinsey, A C Bachmeyer, Dean F Smiley, Mr John Stalnaker, George P Berry, Herman G Weiskotten, Harvey B Stone, Victor Johnson, Francis R Manlove, and Donald G Anderson, Secretary The liaison members are Drs David Ruhe, Harold S Diehl, B R Kirklin, and Mr C Joseph Stetler Valuable advice and assistance are being given the committee by consultants assigned to it by the Armed Services, the Public Health Service, the Office of Defense Mobilization, the Selective Service System, and the Veterans Administration

Four major actions of the Committee during the past year are of special importance

On Nov 1, 1950, the committee submitted a statement to the National Security Resources Board outlining certain recommendations which would aid in maintaining an adequate production of well qualified physicians during partial mobilization It was recommended that the premedical curriculum be not less than three academic years in length, that the medical course consist of four 12 month years and that the accelerated program, which proved so unsatisfactory during World War II, be avoided

In order to maintain an adequate supply of physicians and allied specialists, the Committee recommended that preprofessional and professional students be deferred until completion of their training Such men would then become available to the armed forces and other government services which require their special skills Medical schools should retain full power to select their students and should accept as many as can be accommodated without impairing the quality of training

All medical graduates should have 12 months or more of internship or of graduate or postgraduate study and an active program of resident training should be maintained It was recommended that to replenish and expand medical faculties, adequate provision be made for training those specialists in medicine and the basic sciences who are needed for teaching and research

It was also suggested that the medical curriculum be revised to give proper emphasis to subjects of importance to military medicine and other fields vital to national defense To facilitate this the Joint Committee appointed a subcommittee to study the curriculum and make recommendations This subcommittee consisted of Drs Stanley W Olson, Gaylord W Anderson, G M Dack, Roy R Grinker, Roger A Harvey, Andrew C Ivy, H Worley Kendell, Franklin C McLean, John P Marbarger, and Charles B Puestow, and the following consultants from government services Lt Col Louis B Arnoldi, United States Air Force, Dr W Palmer Dearing, United States Public Health Service, Capt R H Fletcher, United States Navy, and Col Floyd L Wergeland, United States Army

On Feb 10, 1951, the subcommittee's report entitled "Suggestions for Supplementing the Medical Curriculum in Time of National Emergency" was presented to the Joint Committee and shortly thereafter sent to each medical school The report outlines the subject matter to which the student should be introduced to provide him with a sound foundation for dealing with problems of civil defense and military medicine The subcommittee pointed out that most of this material can be satisfactorily covered by using examples drawn from military medicine and civilian disaster to illustrate scientific principles currently presented in the medical course It should, therefore, be possible to integrate this material into the present curriculum and thus avoid giving it in separate courses

On Jan 30, 1951, representatives of the Council and the Association of American Medical Colleges appeared before the subcommittee of the Senate Armed Services Committee in Washington to discuss the medical aspects of pending legislation for universal military training and service The Joint Committee's representatives emphasized the need for maintaining a continuing flow of students through the nation's institutions of higher learning to provide the specialized personnel essential for national defense and endorsed the program for the deferment of college students of high general competence as advocated by the Six Scientific Advisory Committees to the Selective Service System Under this program a pool of college students would be selected for continued training on the basis of their educational aptitude as determined by scores made on a general classification test and their previous academic records The Joint Committee expressed its approval of that section of the Senate bill which provided for competitive scholarships to be awarded on the basis of competence and need It was emphasized that students deferred from training and service should not be exempted from such training and service It was therefore recommended that this period of liability for training and service be extended by a period equal to their educational deferment and that they should ultimately serve the government in the special capacities for which they had been trained

On Aug 17, 1951, the Joint Committee appeared before the National Security Training Commission and presented essentially the same views that were expressed at the Senate hearings

The following sections summarize the policies of the Selective Service System and the Armed Forces, in effect at the time this report was prepared, which bear directly on the personnel involved in medical education

SELECTIVE SERVICE SYSTEM

Responsibility for the classification of registrants rests with the Selective Service Local Boards If an individual or his employer (cf college, medical school or hospital) has requested his deferment and he has been classified as available for military service, then the individual or his employer may, within 10 days of the mailing of the classification notice, file an appeal Should the appeal board sustain the classification, the registrant or his employer may, if there is a dissenting vote in the appeal board, file a written request with the local board to have the decision appealed to the President. If there is no dissenting vote, the State or National Director of Selective Service may appeal the case to the President

Premedical Students —Selective Service System Form 103 may now be used only for identifying those premedical students who have been definitely accepted for admission to medical school and for medical students who are continuing in medical school Premedical students who have not been accepted for admission to medical school and who are therefore not eligible for identification on SSS Form 103 are classed with all other college students and may seek deferment under the general provisions for student deferment.

In selecting college students for deferment, the Selective Service Local Boards may, at their own discretion, be guided by the score made by the student on the general classification test administered for the Selective Service System by the Educational Testing Service or by his previous record of academic performance At present a score of 70 or more on the classification test is considered as evidence of ability or promise sufficient to justify an individual's deferment for further education

In order to be eligible for deferment on the basis of class standing, a student must have maintained the following standing among the male members of his class freshman year, upper one-half, sophomore year, upper two-thirds, junior year, upper three-fourths

A graduate student, other than students of the healing arts who at present are covered separately by Local Board Memorandum No 7, may be deferred if he has been accepted for the next class commencing as a candidate for a graduate degreè and if in his last academic year as an undergraduate he stood among the upper one-half of the male members of his class or if he has scored 75 or better on the classification test

Medical Students —Medical students in good standing are eligible for deferment under the provisions of Local Board Memorandum No 7 and should be so identified by a SSS Form 103 This form should be filled out by the medical school for each student enrolled or definitely accepted for admission and be sent directly to the student's Local Board Copies are no longer to be sent to the National Headquarters of the Selective Service System Deferment may not be for longer than one year at a time but may be renewed and a new Form 103 must be filed, by the school, for each student each year The local boards have been advised, when considering students for deferment, to accept SSS Form 103 as evidence in support of their claim for occupational deferment

In October, 1950, Public Law 779, which provides for the registration, classification, and induction of certain medical, dental, and allied specialists, became effective All medical, dental, and allied specialists who had not yet reached the age of 50 at the time of registration were required to register and thereby became available for military service Registrants were divided into four categories signifying the order of induction

The first priority were those who had had ASTP or V-12 service or had been deferred by the Selective Service System prior to March 31, 1947, for the purpose of pursuing a course of instruction in their professions, and who had not had more than 90 days of service subsequent to the completion of, or release from, the educational program In Priority 2 were to be registered those who had participated in these educational programs but had had more than 90 days but not 21 months of service subsequent to the completion of, or release from, the educational program In Priority 3 would be registered those who had had no service at all since Sept 16, 1940, and in Priority 4 those who did not come under Priorities 1 or 2, and who served subsequent to Sept 16, 1940 The Act provided that such special registrants would be selected for induction first from those registered in Priority 1 and that each priority in turn would be exhausted of available men before the next priority could be used

Men in Priorities 1 and 2 were required to register on Oct. 16, 1950, those in Priorities 3 and 4 on Jan 15, 1951

The law states that the President may provide for the deferment of any person whose deferment is equitable and in the national interest He also is directed to provide for the annual deferment from training and service of premedical, predental and allied preprofessional students in numbers equal to those at present in attendance at colleges and universities

The President is also directed to establish a National Advisory Committee to advise the Selective Service System and aid State and local advisory boards in selecting the needed, medical, dental, and allied personnel

Up to the present time, inductions have been limited to Priority 1

First Year Interns —The Selective Service System has announced that it will not induct a man under Public Law 779 until he has had an opportunity to complete one year of internship training

Residents and Second-Year Interns —No statement of policy has been issued by the National Headquarters of the Selective Service System with respect to residents or second-year interns

The National Advisory Committee to the Selective Service System has indicated that almost all physicians in Priority 1 will be needed by the armed forces and has advised that they should apply for commissions before completion of their internships A few persons in these categories may be deferred for teaching, research, or public health service or because they are rendering essential service in isolated communities

The only persons in this group who can justifiably be recommended for deferment are those who are accepted for training in the scarcity specialties and whose services are required to meet essential needs of medical and dental schools or hospital services The specialties in which critical shortages exist are anesthesiology, physical medicine and rehabilitation, psychiatry, radiology, neurology, pathology, public health, orthopedic surgery, oral surgery, and the basic medical sciences Those few persons in these groups for whom deferment is necessary may be put in Class II-A on recommendation of the advisory groups

Persons in Priority 2, although not obligated for immediate service, should apply for commissions on completion of internships and residencies

Faculty Members—A majority of the faculty members of medical schools are under age 50 and therefore are required to register with the Selective Service System as required under Public Law 779 No policy has been announced by Selective Service on the granting of deferment to faculty members

However, the National Advisory Committee has recommended that, as a general policy, essential members of medical, dental and veterinary medical faculties be held in their teaching positions rather than released for military service This recommendation applies especially to men in the basic science departments and includes persons in Priorities 1 and 2 This policy is not a blanket recommendation for exemption from military service for all teachers Part-time teachers who devote only a small part of their time to teaching, and certain of the younger, full-time teachers in Priorities 1 and 2 will be expected to enter the military services

ARMED FORCES

At the present time a considerable number of premedical students, medical students, interns, residents and faculty are members of the reserve forces of the Army, Navy, Air Force and Marine Corps or of National Guard units Among premedical and medical students, a large number are enrolled as reserves in branches other than the medical departments On Aug 1, 1950, the Secretary of Defense announced a policy on delay in call to active duty for members of all civilian components of the Armed Forces possessing critical occupational skills This statement called attention to the fact that it is a basic function of the civilian components of the Armed Forces to be available for military service in time of emergency in keeping with the traditional policy of our nation to have a relatively small military force in being, supported by reserves and the National Guard It is recognized, however, that in an emergency, the national interest may dictate that the ordering to active duty of some reservists be delayed temporarily The statement goes on to establish the basic criteria on which requests for delay in call to active duty will be considered and evaluated Under these criteria, provision is made for delays in call-up of premedical students who have been definitely accepted for admission to medical schools, medical students, interns and essential residents and faculty members who are in the reserves The statement makes clear that delays in call to active duty will be made only on an individual basis and that they shall not be considered as a means of exempting persons indefinitely from military service

Each of the military departments is responsible for implementing these policies with respect to its own reserves and is issuing its own regulations These regulations are being reported from time to time in THE JOURNAL All the services have emphasized that requests for delay in call-up should not be submitted until orders to report for active duty have actually been received While each of the military departments has estabished an appeal board at the secretarial level which will reconsider individual cases in which the individual or his employer has additional facts or adequate reason to believe that an error was made by the first board, it is emphasized that unless delay in call-up orders are received prior to the reporting date, the person concerned must comply with his original orders

The Department of Defense announced in December, 1950, that, before a medical or dental reserve officer is called to active duty his name is to be sent to the Department of Defense which will request advice from the Armed Forces Medical Policy Council, Office of the Secretary of Defense, the Health Resources Advisory Committee of the Office of Defense Mobilization and the Advisory Committees to the Selective Service System The Military Departments will be guided by the information thus obtained in issuing orders for call to active duty This policy does not apply to organized reservists who have certified their availability for immediate call to duty Where an individual or his employer believes he should not be called to duty the case may be appealed to the Secretary of Defense

The National Fund for Medical Education and the American *Medical Education Foundation*

In the last two Educational Numbers reference has been made to the joint activities of several groups in exploring the possibility of establishing an organization to raise funds on a national scale from voluntary sources for the support of the medical schools In May, 1951, a public announcement was made of the establishment of the National Fund for Medical Education [1] This important new organization is sponsored by outstanding leaders in public affairs, business, industry, agriculture, labor, and higher education and by the American Medical Association and the Association of American Medical Colleges Its board of 66 distinguished trustees, drawn from all parts of the country, is headed by former President Herbert Hoover, as honorary chairman

The objective of the Fund is to raise annually from voluntary sources substantial sums to aid in the support of the nation's medical schools The Fund is concentrating on securing contributions from corporations and organized groups, which have to a large extent replaced individuals as the great potential sources of philanthropy

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[1] The National Fund for Medical Education and the American Medical Education Foundation editorial J A M A. 146:258 259 (May 19) 1951

Earlier this year the American Medical Association sponsored the establishment of the American Medical Education Foundation as an instrument whereby individual physicians and state and county medical societies could make their contributions At the annual meeting of the sponsoring groups at which the announcement of the National Fund was made, it was also announced that the contributions received by the American Medical Education Foundation would be distributed to the medical schools through the National Fund

The National Fund has set a goal of 5 million dollars to be raised during 1951 The American Medical Education Foundation has agreed to raise one million of this amount from the medical profession

By July, 1951, the combined efforts of the Fund and the Foundation had raised a sufficient sum to make possible the awarding of initial grants of $15,000 to each of the 72 four-year medical schools and of $7,500 to each of the seven schools of the basic medical sciences in the United States As more funds are raised, additional grants to the schools will be made later in the year

While the initial grants may appear small, for many schools the grant will constitute the largest unrestricted sum that they will have available during the coming year Being unrestricted, the grants may be used by each school to support those activities that most urgently need additional funds Thus the real value of these grants to a school's educational program will be considerably greater than the sums involved might suggest

A unique and important feature of the operation of both the National Fund and the American Medical Education Foundation is that no portion of any contribution is used for administrative or operational expenses Every dollar contributed is distributed to the medical schools The overhead expenses of the National Fund are being met by special grants from a group of philanthropic foundations and those of the American Medical Education Foundation by the American Medical Association

In the section of this report on the financial support of medical schools evidence is presented to indicate that the gap between the funds available to the medical schools and their needs is being narrowed It may confidently be expected that the efforts of the Fund and the Foundation in the years immediately ahead will be instrumental in further reducing what remains of this gap

Survey of Medical Education

The survey of medical education which is being conducted by the Committee for the Survey of Medical Education under the sponsorship of the Council and the Association of American Medical Colleges ended its second year of field work in the spring of 1951 During the two-year period 41 schools were visited.

At the completion of this phase of the study the Committee, after carefully weighing all aspects of the problem decided that it would not be feasible to visit all medical schools as had been planned when the survey was initiated This decision was based on the recognition that the partial mobilization necessitated by the Korean conflict had resulted in increasing demands upon the medical schools from other sources and on the recognition that the schools individually and collectively are faced with urgent decisions on a number of fundamental, long term educational policies It was the opinion of the committee that it could render more service to the medical schools and the public by preparing an early report of its findings to date than by continuing its field work for another one or two years The Committee, therefore, decided to discontinue visits to the medical schools after June 1, 1951 and to address its full energy to the preparation of a report by the earliest possible date It is now hoped that the report will be published and ready for distribution by the spring of 1952

Early in 1951 the Committee recognized the possibility that it might not be feasible to visit all medical schools The schedule of schools selected for study was, therefore, adjusted to give an adequate cross section of the medical schools of the United States Since the purpose of the survey was to study problems that are basic to all medical schools rather than the peculiar problems of individual schools and since a representative cross section of schools has been studied, it is the committee's belief that the value of its report will not be materially affected by the lack of opportunity to visit all schools

The Subcommittee on Preprofessional Education, under the chairmanship of Dr Aura E Severinghaus of Columbia University, continues to work in coordination with the program of the Survey Committee During the past year the subcommittee made an intensive study of preprofessional education which included visits to approximately 100 colleges and universities which offer preprofessional training In November, 1950, this committee sponsored a three day conference at which a group of leaders from the liberal arts colleges met with the Subcommittee on Preprofessional Education and the Survey Committee for the purpose of discussing the principles and problems of preprofessional education The points of view and opinions expressed in this conference were summarized and utilized by the subcommittee in orienting its study of preprofessional education in the liberal arts colleges

A larger conference is being planned for the spring of 1952 to which representatives of the liberal arts colleges and medical schools will be invited for the purpose of discussing the final report of the subcommittee

Approved Medical Schools

The 72 medical schools in the United States which are approved by the Council on Medical Education and Hospitals are listed in Table 1, the 10 approved Canadian medical schools in Table 2, and the eight approved schools of the basic medical sciences in Table 3

The only change in this list since the publication of the 1950 Educational Number has been the addition of the University of Ottawa Faculty of Medicine to the list of approved Canadian medical schools The University of Ottawa offers a six year program of instruction It admitted its first students in the fall of 1945 and graduated its first class in May, 1951 In accordance with the

TABLE 1 —*Approved Medical Schools in the United States*

Name and Location of School	1952 Premedical Requirement by Years	Students by Classes 1950-1951						Graduates July 1 1950 to June 30 1951	Executive Officer	
		Freshman	Sophomore	Junior	Senior	Required Intern Year	Totals†			
ALABAMA										
1 *Medical College of Alabama Birmingham*	3	56	48	51	52		207	52	James J Durrett M D Dean	1
ARKANSAS										
2 University of Arkansas School of Medicine Little Rock	3	90	89	79	83		340	82	Hayden C Nicholson M D Dean	2
CALIFORNIA										
3 University of California School of Medicine San Francisco	3	72	72	72	71		287	71	Francis Scott Smyth M D Dean	3
4 College of Medical Evangelists Loma Linda Los Angeles	3	97	96	100	81	81	374	81	Walter E Macpherson M D President Los Angeles Harold Shryock M D Dean Loma Linda	4
5 University of Southern California School of Medicine Los Angeles	3	69	68	69	66	67	272	67	Burrell O Raulston M D Dean	5
6 Stanford University School of Medicine Stanford University San Francisco	3	62	61	62	56	58	241	58	Loren R Chandler M D Dean	6
COLORADO										
7 University of Colorado School of Medicine Denver	3	84	72	74	71		301	69	Robert C Lewis Ph D Dean	7
CONNECTICUT										
8 Yale University School of Medicine New Haven	3	66	70	57	59		262	58	C N Hugh Long, M D Dean	8
DISTRICT OF COLUMBIA										
9 Georgetown University School of Medicine Washington	Degree*	122	99	104	103		428	103	Rev Paul A McNally S J Ph D Dean	9
10 George Washington University School of Medicine Washington	3	91	88	86	73		338	72	Walter A Bloedorn M D Dean	10
11 Howard University College of Medicine Washington	4	75	73	78	67		288	66	Joseph L Johnson M D Dean	11
GEORGIA										
12 Medical College of Georgia Augusta	3	79	79	77	73		308	74	G Lombard Kelly M D President	12
13 Emory University School of Medicine Atlanta	3	72	75	68	66		281	66	Hugh Wood M D Dean	13
ILLINOIS										
14 Chicago Medical School	Degree	72	73	65	63	58	273	58	John J Sheinin M D President F J Mullin, Ph D Dean of Faculty	14
15 Northwestern University Medical School Chicago	3	130	124	136	134	143	524	270‡	Richard H Young M D Dean	15
16 Stritch School of Medicine of Loyola University Chicago	3	92	85	85	81		343	79	John F Sheehan M D Acting Dean	16
17 University of Chicago The School of Medicine	3	70	73	66	63		277	62	Lowell T Coggeshall M D Dean Division of Biological Sciences Joseph J Ceithaml Ph D Dean of Students	17
18 University of Illinois College of Medicine Chicago	3	169	164	170	162		665	163	Stanley W Olson M D Dean	18
INDIANA										
19 Indiana University School of Medicine Bloomington Indianapolis	3	151	146	139	106		542	106	John D Van Nuys M D Dean Indianapolis	19
IOWA										
20 State University of Iowa College of Medicine Iowa City	3	121	94	85	95		395	86	Willis M Fowler M D Chairman Exec Committee	20
KANSAS										
21 University of Kansas School of Medicine Lawrence-Kansas City	3	105	96	82	84		367	84	Edward H Hashinger, M D Acting Dean	21
KENTUCKY										
22 University of Louisville School of Medicine Louisville	3	96	87	96	93		373	93	J Murray Kinsman M D Dean	22
LOUISIANA										
23 Louisiana State University School of Medicine New Orleans	3	126	106	98	97		427	97	William W Frye M D Dean	23
24 Tulane University of Louisiana School of Medicine New Orleans	3	130	124	131	134		510	131	Maxwell E Lapham M D Dean	24
MARYLAND										
25 Johns Hopkins University School of Medicine Baltimore	Degree	78	74	76	76		304	76	Alan M Chesney M D Dean	25
26 University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore	3	100	92	98	96		386	96	H Boyd Wylie M D Dean	26
MASSACHUSETTS										
27 Boston University School of Medicine Boston	3	73	70	70	57		270	59	James M Faulkner M D Dean	27
28 Harvard Medical School Boston	3	113	107	141	148		509	145	George Packer Berry M D Dean	28
29 Tufts College Medical School Boston	Degree	112	100	99	96		407	95	Dwight O Hara M D Dean	29
MICHIGAN										
30 University of Michigan Medical School Ann Arbor	3	165	136	129	114		544	113	A C Furstenberg M D Dean	30
31 Wayne University College of Medicine Detroit	3	63	65	63	62		258	62	Gordon H Scott Ph D Dean	31
MINNESOTA										
32 University of Minnesota Medical School Minneapolis	3	128	117	120	113	94	478	94	Harold S Diehl M D Dean of Medical Sciences	32

	MISSOURI										
33	St Louis University School of Medicine, St Louis	3	129	119	117	110		475	110	Melvin A Casberg M D Dean	33
34	Washington University School of Medicine St Louis	3	88	86	102	101		377	100	Robert A Moore M D Dean	34
	NEBRASKA										
35	Creighton University School of Medicine Omaha	3	75	75	69	74		293	74	F G Gillick M D Dean	35
36	University of Nebraska College of Medicine Omaha	3	88	81	85	84		338	82	Harold C Lueth M D Dean	36
	NEW YORK										
37	Albany Medical College Albany	3	55	50	49	39		193	39	James Allan Campbell M D Dean	37
38	State University of New York College of Medicine at New York City Brooklyn	3	149	146	103	96		494	96	Jean A Curran M D Dean	38
39	University of Buffalo School of Medicine Buffalo	4	74	64	65	64		267	64	Stockton Kimball M D Dean	39
40	Columbia University College of Physicians and Surgeons New York	3	120	120	106	111		457	109	Willard C Rappleye M D Dean	40
41	Cornell University Medical College New York	3 and Degree	81	83	84	87		335	87	Joseph C Hinsey Ph D Dean	41
42	New York Medical College Flower and Fifth Avenue Hospitals New York	Degree	129	126	113	113		481	112	J A W Hetrick M D President and Dean	42
43	New York University College of Medicine New York	3	125	127	116	120		488	119	Currier McEwen M D Dean	43
44	University of Rochester School of Medicine and Dentistry	3	70	71	73	66		280	66	George H Whipple M D Dean	44
45	State University of New York at Syracuse College of Medicine Syracuse	3	77	64	44	48		233	48	William R Willard M D Dean	45
	NORTH CAROLINA										
46	Duke University School of Medicine Durham	3	81	76	78	76		311	76	Wilburt C Davison M D Dean	46
47	Bowman Gray School of Medicine of Wake Forest College Winston Salem	3	53	49	59	61		222	61	C C Carpenter M D Dean	47
	OHIO										
48	University of Cincinnati College of Medicine Cincinnati	3	90	88	87	85		350	84	Stanley Dorst M D Dean	48
49	Western Reserve University School of Medicine Cleveland	3	81	82	85	76		324	76	Joseph T Wearn M D Dean	49
50	Ohio State University College of Medicine Columbus	3	150	87	84	75		396	76	Charles A Doan M D Dean	50
	OKLAHOMA										
51	University of Oklahoma School of Medicine Oklahoma City	3	80	80	55	65		280	65	Mark R Everett Ph D Dean	51
	OREGON										
52	University of Oregon Medical School Portland	3	73	71	74	73		291	71	D W E Baird M D Dean	52
	PENNSYLVANIA										
53	Hahnemann Medical College and Hospital of Philadelphia	3	105	85	80	77		347	77	Charles L Brown M D Dean	53
54	Jefferson Medical College of Philadelphia	3	168	159	161	161		649	161	George Allen Bennett M D Dean	54
55	Temple University School of Medicine Philadelphia	3	135	118	128	123		504	122	William N Parkinson M D Dean	55
56	University of Pennsylvania School of Medicine Philadelphia	3	125	123	126	130		504	129	John McK Mitchell M D Dean	56
57	Woman's Medical College of Pennsylvania Philadelphia	3	50	49	47	40		186	39	Marion Fay Ph D Dean	57
58	University of Pittsburgh School of Medicine Pittsburgh	3	101	93	91	81		366	80	William S McEllroy M D Dean	58
	SOUTH CAROLINA										
59	Medical College of the State of South Carolina Charleston	3	62	57	57	57		233	57	Kenneth M Lynch M D President John T Cuttino M D Dean	59
	TENNESSEE										
60	University of Tennessee College of Medicine Memphis	2	140	138	155	154		587	160	O W Hyman Ph D Dean	60
61	Meharry Medical College Nashville	2	65	63	61	56		245	56	Robert A Lambert M D Chairman Interim Committee Michael J Bent, M D Dean	61
62	Vanderbilt University School of Medicine Nashville	3	52	52	51	50		205	54	John B Youmans M D Dean	62
	TEXAS										
63	Southwestern Medical School of the University of Texas Dallas	3	103	98	75	66		342	65	Executive officer James Pinckney Hart Chancellor University of Texas	63
64	University of Texas School of Medicine Galveston	3 and Degree	163	146	90	96		495	90	Chauncey D Leake Ph D Vice Pres D Bailey Calvin, Ph D Dean of Students and Curricular Affairs	64
65	Baylor University College of Medicine Houston	3	92	85	87	87		351	78	W H Moursund M D Dean	65
	UTAH										
66	University of Utah School of Medicine Salt Lake City	3	52	51	50	49		202	49	John Z Bowers M D Dean	66
	VERMONT										
67	University of Vermont College of Medicine Burlington	3	47	43	40	38		168	38	William Eustis Brown M D Dean	67
	VIRGINIA										
68	University of Virginia Department of Medicine Charlottesville	3	74	68	75	71		288	71	Vernon W Lippard M D Dean	68
69	Medical College of Virginia Richmond	3	84	81	101	97		363	95	John B Truslow M D Dean	69
	WASHINGTON										
70	University of Washington School of Medicine Seattle	3	75	72	47	48		242	48	Edward L Turner M D Dean	70
	WISCONSIN										
71	University of Wisconsin Medical School Madison	3	85	84	72	71		312	71	William S Middleton M D Dean	71
72	Marquette University School of Medicine Milwaukee	3	101	94	90	87		372	87	John S Hirschboeck M D Dean	72
	Totals	—	6,293	6 421	6,203	6 0[illegible]6	501	25 633	6 135		

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* Three years for veterans

† Intern enrolment not included in total column

‡ Two classes of graduates Internship discontinued December 1950

established policy of the Council, this school was not eligible for approval until a full program of instruction was organized and in operation for all six years of the medical course While the sixth year class was enrolled in this school, during the spring of 1951, the school was inspected and approved by the Council Approval is retroactive to include all students who have been enrolled in the school since it opened in September, 1945

Tables 1, 2, and 3, list the quantitative premedical requirements which each school will require of the class entering in 1952 They also list the enrolment by classes for the academic year 1950-1951, the number of students enrolled in a required internship year, the total student enrolment exclusive of those in required internships and the number of students graduated by each school from July 1, 1950, to June 30, 1951

For the Canadian schools, enrolments are also given for premedical students enrolled in the medical schools as well as for those in a fifth medical year and in the required intern year

The name of the dean or executive officer is given for each school Changes have been made in the executive officers of 14 of the 90 medical and basic science schools in the United States and Canada since the publication of the 1950 Educational Number The following schools have appointed new executive officers Alabama, Albany, Chicago Medical School, College of Medical Evangelists, Creighton, Jefferson, Medical Col-

TABLE 2 —*Approved Medical Schools in Canada*

Name and Location of School	1952 Premedical Requirement by Years	Students by Classes 1950-1951: First Premedical Year	Second Premedical Year	Freshman	Sophomore	Junior	Senior	Additional Year	Required Intern Year*	Totals	Graduates July 1 1950 to June 30 1951	Executive Officer	
ALBERTA													
1 University of Alberta Faculty of Medicine Edmonton	3			54	50	55	67			216	57	John W Scott M.D Dean	1
MANITOBA													
2 University of Manitoba Faculty of Medicine Winnipeg	3			72	63	73	86		66	294	67	Lennox G Bell M.D Dean	2
NOVA SCOTIA													
3 Dalhousie University Faculty of Medicine Halifax	2			58	55	55	53		55	221	55	H G Grant M D Dean	3
ONTARIO													
4 Queen s University Faculty of Medicine Kingston	1	64		60	61	60	52	50		347	52	G Harold Ettinger M D Dean	4
5 University of Ottawa Faculty of Medicine Ottawa	1	39		60	55	44	52		45	250	43	A L Richard M D Dean	5
6 University of Western Ontario Faculty of Medicine London	2			60	60	62	61			243	61	J B Collip M.D Dean	6
7 University of Toronto Faculty of Medicine Toronto	2	149	143	163	157	178	174			964	174	J A McFarlane M.B Dean	7
QUEBEC													
8 McGill University Faculty of Medicine Montreal	3			116	109	114	118			457	116	C Lyman Duff M.D Dean	8
9 University of Montreal Faculty of Medicine Montreal	Degree			121	98	94	85		94	398	92	Wilbrod Bonin M D Dean	9
10 Laval University Faculty of Medicine Quebec	Degree			164	142	109	67	144		626	141	Charles Vézina M.D Dean	10
Totals		252	143	928	850	844	805	194	260	4 016	858		

* Intern enrolment not included in total column

TABLE 3 —*Approved Schools of the Basic Medical Sciences in the United States and Canada*

Name and Location of School	1952 Premedical Requirement by Years	Students by Classes 1950-1951: Freshman	Sophomore	Total	Executive Officer	
UNITED STATES						
MISSISSIPPI						
1 University of Mississippi School of Medicine Oxford	3	29 32	29 30	58 62	David Schultz Pankratz M D Dean	1
MISSOURI						
2 University of Missouri School of Medicine Columbia	3	45	43	88	Trawick H Stubbs M.D Dean	2
NEW HAMPSHIRE						
3 Dartmouth Medical School Hanover	3	24	25	49	Rolf C Syvertsen M.D Dean	3
NORTH CAROLINA						
4 University of North Carolina School of Medicine Chapel Hill	3	59	58	117	W Reece Berryhill M.D Dean	4
NORTH DAKOTA						
5 University of North Dakota School of Medicine Grand Forks	3	36	29	65	W F Potter M.D Dean	5
SOUTH DAKOTA						
6 University of South Dakota School of Medical Sciences Vermillion	3	33	30	63	Donald Slaughter M D Dean	6
WEST VIRGINIA						
7 West Virginia University School of Medicine Morgantown	3	31	25	56	Edward J Van Liere M D Dean	7
Totals	..	289	269	558		
CANADA						
SASKATCHEWAN						
8 University of Saskatchewan School of Medical Sciences Saskatoon	2	32	30	62	W Stewart Lindsay M B Dean	8
Totals	..	321	299	621		

lege of Virginia, Meharry, South Carolina, Syracuse, Kansas, Utah, and Montreal The deanship at Southwestern is vacant

Medical School Calendars

Conventional schedules, with students entering in September or October and graduating in May or June, were followed during the 1950-1951 academic year by most schools Northwestern University, which discontinued the required intern year, graduated two classes The Universities of Chicago, Minnesota, and Tennessee graduated students each quarter

TABLE 4—*Schools Students*[1] *and Graduates in Class A and Approved Medical Schools*[2] *in the United States, 1910-1951*

Students in the required intern year are not included

	Schools	Students	Graduates
1910	66	12,530	3 165
191	67	11,314	2 029
1920	70	12,559	2 680
1921	70	13 488	2,811
1922	69	14,625	2,304
1923	70	16 454	2,881
1924	70	16 775	3,343
1925	71	17 402	3,842
1926	71	17 887	3 782
1927	73	18,754	3 798
1928	74	19 794	4 091
1929	75	20,848	4 412
1930	76	21,597	4,565
1931	76	21 982	4 735
1932	76	22,135	4,936
1933	77	22 466	4 895
1934	77	22,799	5 035
1935	77	22,888	5,101
1936	77	22,564	5 183
1937	77	22 095	5,377
1938	77	21,587	5 194
1939	77	21,302	5 089
1940	77	21,271	5 097
1941	77	21,379	5,275
1942	77	22 031	5,163
1943	76	22 631	5,223
1944	77	23,529	5,134
1944 (Second Session)	77	24 666	5,169
1945	77	24 028	5,136
1946 (to May 31)	77	23,216	5,826
1947	77	23 900	6,389
1948	77	22 739	5,543
1949	78	23,670	5 094
1950	79	25,103	5 553
1951	79	26 191	6,135

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1 Includes figures for schools of the basic medical sciences

2. Medical schools graded as Class A from 1910-1929 as approved since 1929

The freshman year in most schools began in September or October At Kansas where the freshman year consists of two semesters and one summer session with vacations and periods of instruction staggered, half the freshmen began their studies in June, 1950, and half in September Utah admitted freshmen in June, and Tennessee admitted them quarterly Mississippi admitted two freshman classes one in July, 1950 and one in January, 1951

Schedules for the freshman class will be the same in 1951 as in 1950 at all schools except Utah, where the accelerated program has been discontinued Beginning in 1951, Utah will admit freshmen in September

Canadian medical schools followed regular schedules during the past year and will continue to do so for the coming year

Graduates

The last columns of Tables 1 and 2 give the number of graduates from each medical school in the United States and Canada, respectively, from July 1, 1950, to June 30, 1951 During this period, 6,135 physicians were graduated from medical schools in the United States This total includes two classes of graduates from Northwestern, which this year discontinued a required year of internship before the degree of doctor of medicine was awarded This is the largest number of physicians ever graduated from American medical schools in one year except for the year 1947, when, at the conclusion of the wartime accelerated program, several schools graduated more than one class

Table 4 shows the total number of Class A and approved medical schools in the United States and the total numbers of their students and graduates for each year since 1910 The form of this table continues the practice, inaugurated last year, of separating the statistics for Class A and approved schools from those for Class B and C schools In Table 5 are shown the statistics for Class B and C schools for the year 1910-1929 The A, B, C, classification of medical schools was discontinued by the Council in 1929, and since that time schools have been classed as approved or unapproved Since 1929, statistics have been published only for approved schools The present classification "Approved Medical School" is equivalent to the former Class A This fact should be borne in mind by those who desire to make comparative studies on the production of physicians

The schools with the largest number of graduates were Illinois 163, Jefferson 161, Tennessee 150, and Harvard 145 Northwestern University, as reported above, graduated two classes, a five year class of 143 students and a four year class of 136 students Only five schools had fewer than 50 graduates Utah 49, Syracuse 48, Woman's 39, Albany 39, and Vermont 38

The Canadian schools had 858 graduates Toronto, with 174, and Laval, with 141, had the largest number of graduates, while Ottawa, with 43, and Queen's, with 52, had the smallest numbers

Baccalaureate degrees (Table 6) were held by 4,630, or 75 5%, of the 6,135 students graduated from schools in the United States during 1950-1951 and by 509, or 59 3%, of the 858 students graduated by the Canadian schools in the same period

TABLE 5—*Schools Students*[1] *and Graduates in Class B and Class C Medical Schools in the United States, 1910 1929*

Students in the required intern year are not included

	Class B			Class C		
	Schools	Students	Graduates	Schools	Students	Graduates
1910	48	6 944	854	22	[illegible]	421
191	[illegible]	2 008	688	15	909	219
1920	10	731	162	8	[illegible]	205
1921	9	832	200	7	593	180
1922	7	852	143	7	603	[illegible]
1923	4	522	83	7	456	[illegible]
1924	4	583	115	6	370	104
1925	3	554	119	6	181	14
1926	3	582	130	5	371	100
1927	3	564	117	4	344	129
1928	2	371	96	4	340	[illegible]
1929	1	35	81	0	0	0

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1 Includes figures for schools of the basic medical sciences

The estimated number of graduates for 1951-1952, based on enrolments reported for the senior class, is 6,177 The Canadian schools estimate that their graduates will total 806

Enrolments

During the past year all records were again broken for total enrolment and for the number of students admitted to approved medical schools in the United States Total enrolment in the 72 medical and seven basic science schools in the United States during 1950-1951 was 26,191, as compared with 25,103 for the preceding year This is an increase of 1,088, or 4 1%, in total enrolment The freshman class, totaling 7,182, is the largest in the history of the approved schools It is larger by 140, or 2 0%, than last year's freshman class Enrolment figures for the individual schools are given in Tables 1 and 3 Total enrolments for medical and basic science schools in the United States and Canada are recapitulated in Table 7

Total enrolment for the Canadian schools, including one basic science school, was 3,489, an increase of 211, or 6 4%, over the preceding year In addition, there were 395 premedical students and 194 students enrolled in a fifth (not intern) year These premedical and fifth year students are included in the "*total*" column of Table 2 but are not included in Table 7

There were 761 students in the required intern year in the United States and in Canada The total number of students enrolled in a required intern year in the United States is shown in Table 8 for each academic year since 1930-1931

In Table 9 the total enrolments in the various classes in the medical and basic science schools in the United States are recorded for each academic session since 1930-1931 It should be noted that prior to 1942-1943 the totals shown in Table 9 are somewhat higher than the sum of the figures for the various classes in a given year This discrepancy resulted from the inability of certain schools in the earlier years strictly to classify their students into conventional graded classes

TABLE 6 —*Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, July 1, 1950 to June 30 1951*

United States	Graduates	Degrees	Per Cent with Degrees
Medical College of Alabama	52	51	98 0
University of Arkansas	82	29	35.5
University of California	71	65	91 6
College of Medical Evangelists	81	48	59.3
University of Southern California	67	45	67 6
Stanford University	58	57	98 3
University of Colorado	69	63	91 3
Yale University (Connecticut)	58	48	82 7
Georgetown University (Dist of Columbia)	103	80	77 7
George Washington University	72	52	72 2
Howard University	66	61	92 4
Emory University (Georgia)	66	52	78 8
Medical College of Georgia	74	48	58 1
Chicago Medical School (Illinois)	58	58	100 0
Northwestern University	279	262	93 9
Stritch School of Medicine	79	31	39.2
University of Chicago	62	47	75 8
University of Illinois	163	152	93.3
Indiana University	106	99	93 4
State University of Iowa	86	57	66 1
University of Kansas	84	83	98.8
University of Louisville (Kentucky)	93	54	58 1
Louisiana State University	97	50	51 5
Tulane University of Louisiana	131	87	66 4
Johns Hopkins University (Maryland)	76	74	97.5
University of Maryland	96	60	62 5
Boston University (Massachusetts)	59	46	78 0
Harvard Medical School	145	116	80 0
Tufts College Medical School	95	89	93 7
University of Michigan	113	94	83 2
Wayne University	62	35	56 5
University of Minnesota	94	94	100 0
St. Louis University (Missouri)	110	44	40 0
Washington University	100	69	69 0
Creighton University (Nebraska)	74	40	54 1
University of Nebraska	82	72	87.8
Albany Medical College (New York)	39	32	82 1
State University of New York Brooklyn	96	79	82 3
University of Buffalo	64	32	50 0
Columbia University	109	100	91 7
Cornell University	87	82	94 3
New York Medical College	112	96	85 7
New York University	119	96	80 7
University of Rochester	66	53	80.3
State University of New York Syracuse	48	44	91 7
Duke University (North Carolina)	78	20	20.3
Bowman Gray School of Medicine	61	52	85 2
University of Cincinnati (Ohio)	84	67	79 8
Western Reserve University	76	70	92 1
Ohio State University	76	67	88 2
University of Oklahoma	65	39	60 0
University of Oregon	71	71	100 0
Hahnemann Medical College (Pennsylvania)	77	65	84 4
Jefferson Medical College	161	114	70 8
Temple University	122	91	74 6
University of Pennsylvania	129	109	84 5
Woman's Medical College	89	84	67 2
University of Pittsburgh	80	67	83.8
Medical College of South Carolina	57	42	73 6
University of Tennessee	150	46	30 7
Meharry Medical College	56	44	78 6
Vanderbilt University	54	54	100 0
Southwestern Medical School (Texas)	65	33	50 8
Baylor University	78	45	57 7
University of Texas	96	40	41 7
University of Utah	49	47	95 9
University of Vermont	38	29	76.3
Medical College of Virginia	95	79	82 2
University of Virginia	71	52	73 2
University of Washington	48	30	62.5
University of Wisconsin	71	71	100 0
Marquette University	87	31	35 6
Totals	6 135	4 630	75 4
Canada			
University of Alberta	57	57	100 0
University of Manitoba	67	17	25 1
Dalhousie University Nova Scotia	55	22	40 0
Queen's University Ontario	52	7	13.5
University of Western Ontario	61	15	24 6
University of Ottawa	43	23	53 4
University of Toronto	174	36	20 7
McGill University Quebec	116	99	85 0
University of Montreal	92	92	100 0
Laval University	141	141	100 0
Totals	858	509	59/3
Totals	6,993	5 139	73 4

TABLE 7 —*Enrolments by Classes in Medical Schools of the United States and Canada, 1950 1951*

Students in the required intern year are not included

	Freshmen	Sophomores	Juniors	Seniors	Total	Total Preceding Session
72 Medical Schools (U S)	6,893	6 421	6,263	6 056	25,633	24,547
7 Basic Science Schools (U S)	289	209			558	556
Totals (U S)	7,182	6 630	6,263	6,056	26,191	25,103
10 Medical Schools (Canada)	928	850	844	805	3 427*	3,217†
1 Basic Science School (Canada)	32	30			62	61
Totals (Canada)	960	880	844	805	3 489*	3,278†
Grand Totals (U S and Canada)	8 142	7 570	7,107	6 861	29,680	28,381

* Does not include 395 premedical and 194 fifth year students
† Does not include 357 premedical and 169 fifth year students

TABLE 8 —*Students in the Required Intern Year in the United States, 1931-1951*

1930-1931	1 025
1931 1932	1 007
1932 1933	1,106
1933-1934	1 183
1934-1935	1,233
1935-1936	1,213
1936-1937	1,255
1937 1938	1,132
1938-1939	1 152
1939-1940	1,152
1940-1941	1 058
1941 1942	707
1942 1943	680
1943-1944	461
1944 (Second Session)	447
1944 1945	453
1945-1946	488
1946-1947 *	582
1947 1948	447
1948-1949	458
1949-1950	464
1950-1951	501

* Includes additional classes

In Table 10, the 72 medical schools of the United States are arranged in the order of the size of their student bodies The median enrolment was 340, and the average was 356

Responsibilities of Medical Schools for Other Students

The educational responsibilities of a medical school today cannot be properly measured or understood if attention is given only to the number of undergraduate medical students it enrolls Many medical schools provide instruction in whole or in part for large numbers of other students Only in recent years has this fact become appreciated, and even now it is not always fully grasped by those who seek to assess the contribution that a medical school makes to a university's total program of education

In Table 11 are listed by general categories the numbers of students other than regular medical students who received instruction during the last year under the auspices of the medical schools in the United States and Canada This year specific information was requested for the first time as to the number of dental, pharmacy, nursing, and technical students receiving instruction from medical school faculties In previous years some schools reported these students under the category of nonmedical students while other schools did not report them at all Attention was called in earlier reports to the fact that these differences in reporting resulted in totals that were incomplete It seems likely that no large groups of students have been omitted from this year's report and that the figures indicate with considerable accuracy the total student loads carried by the individual schools

TABLE 9—*Students in the Medical and Basic Science Schools in the United States 1931-1951*

Students in the required intern year are not included

	Freshmen	Sophomore	Junior	Senior	Total
1930-1931	6 456	5,538	5 080	4 908	21,982
1931 1932	6,200	5 462	4 932	4,885	22 135
1932 1933	6 436	5 479	5 017	4,948	22 466
1933-1934	6 457	5,571	4,968	4,937	22,799
1934 1935	5,856	5 624	5 142	4,905	22,888
1935-1936	6,605	5 463	5,230	5 020	22,564
1936-1937	5 910	5 209	5,140	5 158	22 095
1937 1938	5 791	6,225	4 986	5 036	21,587
1938-1939	5 764	5 100	4 947	4 921	21,302
1939-1940	5 794	5 177	4 921	4,894	21,271
1940-1941	5,837	5,254	4,969	4,849	21,379
1941 1942	6 918	5 406	5 087	4 912	22 031
1942 1943	6 425	5,828	5,278	5 100	22 631
1943-1944	6 561	6 071	5 640	5,257	23,529
1944 (second session)	6,648	6,140	6 084	5 794	24 666
1944-1945	6,523	5 979	5 700	5,826	24 028
1945-1946	6 060	5,705	5 751	5 655	23,216
1946-1947 *	6 504	5,575	5 767	5 994	23,900
1947 1948	6 487	5 758	5 154	5 340	22 739
1948-1949	6 688	6,194	5 702	5,080	23 670
1949-1950	7 042	6,344	6 079	5 038	25 103
1950-1951	7 182	6 090	6 263	6 656	26 191

* Includes additional classes

For all medical schools in the United States the number of students other than regular undergraduate medical students for whom the schools assumed responsibility totaled 57,262 The total enrolment of undergraduate medical students was 26,191 These figures make it clear that undergraduate medical students constitute less than one-third of the total number of students receiving instruction from the medical schools It must, of course, be recognized that the additional students in several of the categories reported in Table 11 did not receive full-time instruction comparable to that provided medical students However, students in several categories including physicians and other graduate students working for advanced degrees in the basic medical sciences, students in technical schools, interns and residents, physicians holding appointment as fellows, and in several schools dental students, did follow full-time courses of instruction provided by the faculties of the medical schools Students in these categories total 16,820

TABLE 10—*Medical Schools of the United States in Order of Size of Total Enrolment, 1950-1951*

University of Illinois	665
Jefferson Medical College	649
University of Tennessee	587
University of Michigan	544
Indiana University	542
Northwestern University	524
Tulane University	519
Harvard Medical School	509
University of Pennsylvania	504
Temple University	504
University of Texas	495
State University of New York Brooklyn	494
New York University	488
New York Medical College	481
University of Minnesota	479
St Louis University	475
Columbia University	457
Georgetown University	428
Louisiana State University	427
Tufts College Medical School	407
Ohio State University	396
State University of Iowa	395
University of Maryland	386
Washington University	377
College of Medical Evangelists	374
University of Louisville	372
Marquette University	372
University of Kansas	367
University of Pittsburgh	366
Medical College of Virginia	363
Baylor University	351
University of Cincinnati	350
Hahnemann Medical College of Philadelphia	347
Stritch School of Medicine	343
Southwestern Medical School	342
University of Arkansas	340
George Washington University	338
University of Nebraska	338
Cornell University	335
Western Reserve University	324
University of Wisconsin	312
Duke University	311
Medical College of Virginia	308
Johns Hopkins University	304
University of Colorado	301
Creighton University	293
University of Oregon	291
Howard University	288
University of Virginia	288
University of California	287
Emory University	281
University of Rochester	280
University of Oklahoma	280
University of Chicago	277
Chicago Medical School	273
University of Southern California	272
Boston University	270
University of Buffalo	267
Yale University	262
Wayne University	258
Meharry Medical College	245
University of Washington	242
Stanford University	241
Medical College of State of South Carolina	233
State University of New York Syracuse	233
Bowman Gray School of Medicine	222
Medical College of Alabama	207
Vanderbilt University	206
University of Utah	202
Albany Medical College	193
Woman's Medical College of Pennsylvania	186
University of Vermont	169
Totals	25 625

Because of the differences in reporting referred to above, it is not possible to compare with exactness the total number of additional students reported for this year with that for last year However, when the dental, pharmacy, nursing, and technical students are excluded from this year's total, the remaining students, numbering 40,314, exceed by 7,808 last year's total of 32,506 additional students This would indicate that there was a real

TABLE 11 —*Other Students for Whom Medical Schools Were Responsible, 1950 1951*

School	Part Time or Special Students Working Toward M D Degree	Physicians Enrolled for Advanced Degrees	Other Graduate Students Working for Degrees in Basic Medical Sciences	Dental Students Receiving Instruction from Medical School Faculty	Pharmacy Students Receiving Instruction from Medical School Faculty	Nursing Students Receiving Instruction from Medical School Faculty	Students in Technical Schools Receiving Instruction from Medical School Faculty	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Refresher or Continuation Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Holding Appointments as Fellows	Interns for Whose Instruction & Supervision the Medical School was Primarily Responsible	Residents for Whose Instruction & Supervision the Medical School was Primarily Responsible	Totals
Medical College of Alabama	5	0	12	0	0	0	36	1	0	0	4	31	42	131
University of Arkansas	1	0	9	0	0	0	29	0	345	0	0	8	48	440
College of Medical Evangelists (Calif)	0	0	4	0	0	156	54	0	1	24	4	81	50	374
Stanford University	0	0	1	0	0	91	32	0	200	0	39	50	80	493
University of California	0	0	0	193	195	206	41	233	972	99	4	20	80	1 993
University of Southern California	0	1	89	0	0	0	0	0	220	0	3	75	65	453
University of Colorado	1	208	57	0	0	213	46	0	226	20	4	32	131	938
Yale University (Connecticut)	0	0	116	0	0	0	0	0	339	74	0	40	99	668
George Washington University (D C)	0	0	138	0	60	0	8	176	110	0	23	43	84	642
Georgetown University	0	8	12	187	0	51	3	0	0	0	6	9	54	330
Howard University	1	0	0	51	80	31	0	31	0	0	5	20	34	253
Emory University (Georgia)	0	0	15	78	0	241	12	2	112	0	12	36	159	667
Medical College of Georgia	13	0	0	0	0	60	4	0	191	0	0	9	49	326
Chicago Medical School (Illinois)	0	0	0	0	0	0	0	0	0	0	5	0	0	5
Northwestern University	5	53	68	0	0	140	26	1	14	170	0	143	0	620
Stritch School of Medicine	0	6	62	0	0	0	0	0	0	17	0	0	17	102
University of Chicago	0	5	200	0	0	0	0	0	0	0	29	34	103	371
University of Illinois	0	37	81	193	219	86	14	4	66	9	0	21	56	786
Indiana University	1	6	8	220	0	246	73	9	48	81	11	26	98	827
State University of Iowa	0	16	69	52	55	203	69	729	261	38	4	20	124	1 640
University of Kansas	7	18	70	1	70	151	116	1 658	1 179	2	3	18	60	3 351
University of Louisville (Kentucky)	4	0	12	122	0	125	0	24	290	0	12	17	64	670
Louisiana State University	1	0	4	0	0	0	0	0	46	22	1	0	0	74
Tulane University	1	50	39	0	0	150	0	65	195	32	34	34	90	690
Johns Hopkins University (Maryland)	0	0	3	0	0	168	0	18	9	0	74	0	0	272
University of Maryland	0	0	18	0	75	58	0	2	163	0	26	71	42	445
Boston University (Massachusetts)	0	0	44	0	0	275	36	47	157	0	6	0	5	570
Harvard Medical School	0	0	41	28	0	0	0	0	500	86	300	0	0	955
Tufts College Medical School	0	0	12	179	0	0	0	0	132	3	41	0	0	367
University of Michigan	4	0	520	87	118	172	51	326	1 771	0	9	55	66	3 179
Wayne University	2	93	37	140	0	0	24	0	249	15	0	0	0	560
University of Minnesota	2	824	203	256	329	294	0	1 569	1 477	0	0	29	299	5 282
University of Mississippi	0	0	11	0	92	0	0	0	0	0	0	0	0	105
St. Louis University (Missouri)	6	0	0	0	0	0	0	0	105	0	0	8	57	176
University of Missouri	8	0	23	0	0	0	46	226	0	0	0	0	0	303
Washington University	0	0	0	0	0	0	62	33	133	21	57	55	105	466
Creighton University (Nebraska)	7	0	2	79	23	120	0	7	0	0	0	21	12	271
University of Nebraska	1	1	6	0	0	197	13	0	34	0	2	9	47	310
Dartmouth Medical School (New Hampshire)	0	0	0	0	0	96	10	2	2	1	3	11	57	182
Albany Medical College (New York)	2	0	0	0	0	332	0	0	89	0	0	26	35	484
Columbia University	0	4	0	77	0	306	0	14	908	137	15	38	180	1,810
Cornell University	1	3	15	0	0	190	0	0	33	21	52	0	0	315
State Univ of New York Coll of Med at New York City	0	37	0	0	0	0	0	0	39	0	0	0	0	76
New York Medical College	5	17	0	0	0	72	0	0	125	0	3	6	23	251
New York University	1	79	90	150	0	450	0	40	1 417	0	60	68	124	2 479
State University of New York Coll of Med at Syracuse	0	0	1	0	0	0	0	0	272	0	12	20	64	369
University of Buffalo	0	0	26	123	60	32	0	15	95	0	0	0	0	351
University of Rochester	0	0	0	0	0	174	0	0	0	0	28	48	103	353
Duke University (North Carolina)	0	0	0	0	0	135	45	10	10	10	14	76	75	374
University of North Carolina	0	0	16	40	51	0	0	163	282	0	2	0	0	554
Bowman Gray School of Medicine	0	0	5	0	0	105	11	0	0	0	0	16	44	181
University of North Dakota	2	0	4	0	0	48	0	13	0	0	0	0	0	73
Ohio State University	1	14	8	177	90	172	275	842	0	0	6	21	71	1 677
University of Cincinnati	0	6	11	0	0	0	0	5	330	0	29	44	110	535
Western Reserve University	1	0	54	175	0	199	17	6	203	42	44	58	60	868
University of Oklahoma	0	1	7	0	0	123	13	0	450	68	5	48	55	770
University of Oregon	1	4	19	4	0	392	0	3	182	0	0	18	64	687
Hahnemann Medical College (Pennsylvania)	0	0	7	0	0	42	0	31	0	0	9	0	0	89
Jefferson Medical College	0	0	27	0	0	0	0	0	0	0	11	9	39	86
Temple University	0	0	0	0	0	300	11	0	68	0	0	0	81	460
University of Pennsylvania	0	0	87	140	0	24	47	0	45	0	86	27	196	652
University of Pittsburgh	2	0	0	0	0	921	0	0	0	122	0	15	121	1 181
Woman's Medical College	0	0	1	0	0	56	0	0	0	0	10	5	9	81
Medical College of South Carolina	0	1	12	0	106	135	13	0	319	5	10	21	32	654
University of South Dakota	5	0	0	0	0	0	5	124	0	2	30	2	1	169
Meharry Medical College (Tennessee)	6	0	8	67	0	10	10	0	0	0	3	10	16	130
University of Tennessee	0	16	30	287	233	128	0	19	0	0	0	0	0	719
Vanderbilt University	0	0	12	0	0	65	0	3	0	0	0	37	62	179
Baylor University (Texas)	0	0	0	0	0	0	0	0	216	0	4	0	0	220
Southwestern Medical College	0	0	0	0	0	73	0	3	15	0	5	0	0	96
University of Texas	1	0	15	60	0	117	30	4	1 160	4	6	24	86	1,507
University of Utah	3	3	159	0	0	146	0	569	89	0	14	13	57	1 053
University of Vermont	0	1	14	0	0	98	20	0	0	0	21	0	0	154
Medical College of Virginia	0	2	11	194	227	159	36	58	950	0	4	41	94	1 776
University of Virginia	0	8	0	0	0	194	0	0	180	0	13	31	72	498
University of Washington School of Medicine	0	2	49	275	240	350	12	2 605	413	21	11	26	27	4 061
West Virginia University	0	0	6	0	66	0	26	0	0	0	0	0	0	98
Marquette University (Wisconsin)	5	39	11	219	0	0	0	0	83	6	10	0	62	435
University of Wisconsin	0	0	23	0	108	87	20	17	144	0	0	13	60	472
Totals	106	1 561	2 720	3 854	2 497	9 195	1 402	9 838	17 654	1 152	1 238	1 786	4,259	57,262
CANADA														
University of Alberta	0	19	21	0	0	0	0	0	192	2	0	0	0	234
University of Manitoba	0	12	0	0	0	350	0	0	54	12	0	66	8	502
Dalhousie University (Nova Scotia)	0	0	0	36	24	19	0	23	190	6	5	55	0	359
Queen's University (Ontario)	0	3	0	0	0	14	0	14	36	4	7	13	4	95
University of Ottawa	2	0	5	0	0	0	0	0	5	0	3	45	5	65
University of Toronto	0	62	41	162	112	25	0	774	105	64	78	0	0	1 423
University of Western Ontario	1	6	43	0	0	51	0	7	0	0	7	0	0	115
Laval University (Quebec)	1	0	0	0	0	0	0	0	0	0	0	0	0	1
McGill University	0	0	0	0	0	0	0	6	0	0	0	0	0	6
University of Montreal	0	0	8	124	0	0	0	0	0	27	0	94	0	253
University of Saskatchewan	0	0	12	0	72	15	50	24	0	0	0	0	0	173
Totals	4	102	130	322	208	474	50	848	582	115	100	273	17	3,225

TABLE 12—*Distribution by Sex of Medical Students, and Graduates in the United States and Canada 1950-1951*

United States	Students Men	Students Women	Graduates Men	Graduates Women
Medical College of Alabama	200	7	49	3
University of Arkansas	330	10	80	2
University of California	264	23	68	8
College of Medical Evangelists	347	27	72	9
University of Southern California	259	13	63	4
Stanford University	225	16	54	4
University of Colorado	* 282	19	62	7
Yale University (Connecticut)	240	22	51	7
Georgetown University (Dist Columbia)	406	22	98	5
George Washington University	323	15	65	7
Howard University	259	20	56	10
Emory University (Georgia)	275	6	62	4
Medical College of Georgia	294	14	73	1
Chicago Medical School (Illinois)	264	9	66	2
Northwestern University	496	28	265	14
Stritch School of Medicine	333	10	77	2
University of Chicago	* 257	20	57	5
University of Illinois	627	88	146	17
Indiana University	513	29	102	4
State University of Iowa	376	19	79	7
University of Kansas	351	16	79	5
University of Louisville (Kentucky)	350	22	86	7
Louisiana State University	402	25	90	7
Tulane University of Louisiana	495	24	121	10
Johns Hopkins University (Maryland)	279	25	95	11
University of Maryland	369	17	92	4
Boston University (Massachusetts)	253	17	56	3
Harvard Medical School	478	31	137	8
Tufts College Medical School	389	18	88	7
University of Michigan	511	33	105	8
Wayne University	258	5	61	1
University of Minnesota	454	24	81	8
University of Mississippi	117	3		
University of Missouri	85	3		
St Louis University	471	4	110	0
Washington University	351	20	92	8
Creighton University (Nebraska)	283	10	69	5
University of Nebraska	319	19	78	4
Dartmouth Med School (New Hampshire)	49	0		
Albany Medical College (New York)	180	13	36	3
State University of New York College of Medicine at New York City	460	34	84	12
University of Buffalo	254	13	63	1
Columbia University	407	50	94	15
Cornell University	311	24	76	11
New York Medical College	429	52	92	20
New York University	445	43	104	16
University of Rochester	259	21	60	0
State University of New York at Syracuse College of Medicine	223	10	44	4
University of North Carolina	115	2		
Duke University	295	16	70	6
Bowman Gray School of Medicine	218	9	58	3
University of North Dakota	65	0		
University of Cincinnati (Ohio)	341	9	78	0
Western Reserve University	293	31	67	0
Ohio State University	379	17	73	3
University of Oklahoma	269	11	60	5
University of Oregon	277	14	66	5
Hahnemann Med College (Pennsylvania)	325	22	71	6
Jefferson Medical College	649	0	161	0
Temple University	406	38	109	13
University of Pennsylvania	484	20	120	9
Woman's Medical College	0	180	0	30
University of Pittsburgh	351	15	78	2
Medical College of South Carolina	229	4	57	0
University of South Dakota	58	5		
University of Tennessee	562	25	144	6
Meharry Medical College	232	13	52	4
Vanderbilt University	201	4	50	4
Southwestern Medical School (Texas)	325	17	60	5
University of Texas	471	24	90	6
Baylor University	334	17	73	5
University of Utah	194	8	48	1
University of Vermont	159	0	85	3
University of Virginia	284	4	71	0
Medical College of Virginia	337	26	89	6
University of Washington	226	16	48	5
West Virginia University	51	5		
University of Wisconsin	280	23	60	11
Marquette University	356	16	81	6
Totals	24 627	1,564	5 667	468
Canada				
University of Alberta	202	14	53	4
University of Manitoba*	275	19	63	4
Dalhousie University (Nova Scotia)	210	11	53	2
Queen's University (Ontario)	260	23	61	1
University of Ottawa	207†	4†	40	3
University of Western Ontario	228	15	54	7
University of Toronto	614‡	58‡	149	25
McGill University (Quebec)	430	27	100	7
University of Montreal	370	28	86	6
Laval University	617	9	137	4
University of Saskatchewan	56	6		
Totals	3 469	214	795	63
Totals	28 096	1 778	6 462	531

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* Excludes 6[illegible] men and 2 women premedical students

† Excludes 37 men and 2 women premedical students

Excludes 255 men and 27 women premedical students

increase during the past year in the number of additional students for which the medical schools provided instruction

In the category of physicians enrolled for advanced degrees, the number increased from 1,125 to 1,561 Other graduate students working for advanced degrees in the basic medical sciences jumped from 2,094 to 2,720 The total number of graduate students in the United States in these two categories was 4,281 which may be compared with the total of 3,219 last year and the highest prewar total of 1,167, for evidence of the continuing increase in the number of persons pursuing graduate study in the medical sciences

TABLE 13—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1 073	4.1	210	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	904	4.9	169	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1 056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1 077	4.7	207	4.1
1936	1 133	5.0	240	4.7
1937	1,113	5.1	238	4.4
1938	1 161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1 140	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1 150	5.1	241	4.6
1944	1,176	5.0	239	4.7
1944 (second session)	1 141	4.6	252	4.9
1945	1,852	5.6	262	5.1
1946 (to May 31)	1 868	8.0	242	4.2
1947 *	2,183	9.1	342	5.4
1948	2 159	9.5	392	7.1
1949	2 109	8.9	612	12.1
1950	1,806	7.2	595	10.7
1951	1,564	5.9	468	7.6

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* Includes additional classes

TABLE 14—*Enrolment by Classes of Veterans and Non Veterans in the Medical and Basic Science Schools in the United States, 1950 1951*

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Freshmen	2,852	3,954	6,806	15	361	376	7 182
Sophomores	3 694	2,626	6,320	18	352	370	6 690
Juniors	3,966	1,933	5,899	16	348	364	6 263
Seniors	3,942	1 660	5 602	25	429	454	6 056
Totals	14 454	10 173	24 627	74	1 490	1,564	26 191

The 17,654 physicians enrolled in refresher or continuation courses represented no significant change from the total of 17,930 reported last year Likewise, the total of 1,152 physicians enrolled in formal basic science courses in preparation for specialty board certification differed only slightly from the total of 1,087 for the previous year Physicians holding appointments as fellows also increased only slightly from 1,135 to 1,238

In Canada the total number of additional students during the past year was 3,225 When the categories of students that were reported this year for the first time are excluded, the total is 2,271, a definite increase over the total of 1,420 reported in the previous year

TABLE 11 —*Other Students for Whom Medical Schools Were Responsible 1950-1951*

School	Part Time or Special Students Working Toward M D Degree	Physicians Enrolled for Advanced Degrees	Other Graduate Students Working for Degrees in Basic Medical Sciences	Dental Students Receiving Instruction from Medical School Faculty	Pharmacy Students Receiving Instruction from Medical School Faculty	Nursing Students Receiving Instruction from Medical School Faculty	Students in Technical Schools Receiving Instruction from Medical School Faculty	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Refresher or Continuation Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Holding Appointments as Follows	Interns for Whose Instruction & Supervision the Medical School was Primarily Responsible	Residents for Whose Instruction & Supervision the Medical School was Primarily Responsible	Totals
Medical College of Alabama	5	0	12	0	0	0	36	1	0	0	4	31	42	131
University of Arkansas	1	0	9	0	0	0	29	0	345	0	0	8	48	440
College of Medical Evangelists (Calif)	0	0	4	0	0	156	54	0	1	24	4	81	50	374
Stanford University	0	0	1	0	0	91	32	0	200	0	39	50	80	493
University of California	0	0	0	193	195	206	41	233	972	99	4	20	30	1 993
University of Southern California	0	1	89	0	0	0	0	0	220	0	3	75	65	453
University of Colorado	1	208	57	0	0	213	46	0	226	20	4	32	131	938
Yale University (Connecticut)	0	0	116	0	0	0	0	0	339	74	0	40	99	668
George Washington University (D C)	0	0	138	0	60	0	8	176	110	0	23	43	84	642
Georgetown University	0	8	12	187	0	51	3	0	0	0	6	9	54	330
Howard University	1	0	0	51	80	31	0	31	0	0	5	20	34	253
Emory University (Georgia)	0	0	15	78	0	241	12	2	112	0	12	36	159	667
Medical College of Georgia	13	0	0	0	0	60	4	0	191	0	0	9	49	326
Chicago Medical School (Illinois)	0	0	0	0	0	0	0	0	0	0	5	0	0	5
Northwestern University	5	53	68	0	0	140	28	1	14	170	0	143	0	620
Stritch School of Medicine	0	6	62	0	0	0	0	0	0	17	0	0	17	102
University of Chicago	0	5	200	0	0	0	0	0	0	0	29	34	103	371
University of Illinois	0	37	81	193	219	86	14	4	66	9	0	21	56	786
Indiana University	1	6	8	220	0	246	73	9	48	81	11	26	98	827
State University of Iowa	0	16	69	52	55	203	69	729	261	38	4	20	124	1 640
University of Kansas	7	16	70	1	70	151	116	1 658	1 179	2	3	18	60	3,351
University of Louisville (Kentucky)	4	0	12	122	0	125	0	24	290	0	12	17	64	670
Louisiana State University	1	0	4	0	0	0	0	0	46	22	1	0	0	74
Tulane University	1	50	30	0	0	150	0	65	195	32	34	34	90	690
Johns Hopkins University (Maryland)	0	0	3	0	0	168	0	18	9	0	74	0	0	272
University of Maryland	0	0	18	0	75	58	0	2	153	0	26	71	42	445
Boston University (Massachusetts)	0	0	44	0	0	275	36	47	157	0	6	0	5	570
Harvard Medical School	0	0	41	28	0	0	0	0	500	86	300	0	0	955
Tufts College Medical School	0	0	12	179	0	0	0	0	132	3	41	0	0	367
University of Michigan	4	0	520	87	118	172	51	326	1 771	0	9	55	66	3 179
Wayne University	2	93	37	140	0	0	24	0	249	15	0	0	0	560
University of Minnesota	2	824	203	256	329	294	0	1 569	1 477	0	0	29	299	5,282
University of Mississippi	0	0	11	0	92	0	0	0	0	0	0	0	0	105
St. Louis University (Missouri)	6	0	0	0	0	0	0	0	105	0	0	8	57	176
University of Missouri	8	0	23	0	0	0	46	226	0	0	0	0	0	303
Washington University	0	0	0	0	0	0	62	33	133	21	57	55	105	466
Creighton University (Nebraska)	7	0	2	79	23	120	0	7	0	0	0	21	12	271
University of Nebraska	1	1	6	0	0	197	13	0	34	0	2	9	47	310
Dartmouth Medical School (New Hampshire)	0	0	0	0	0	96	10	2	2	1	3	11	57	182
Albany Medical College (New York)	2	0	0	0	0	332	0	0	89	0	0	26	35	484
Columbia University	0	4	0	77	0	306	0	14	908	137	15	38	180	1 810
Cornell University	1	3	15	0	0	190	0	0	33	21	52	0	0	315
State Univ of New York Coll of Med at New York City	0	37	0	0	0	0	0	0	39	0	0	0	0	76
New York Medical College	5	17	0	0	0	72	0	0	125	0	3	5	23	251
New York University	1	79	90	150	0	450	0	40	1 417	0	60	68	124	2 479
State University of New York Coll of Med at Syracuse	0	0	1	0	0	0	0	0	272	0	12	20	64	369
University of Buffalo	0	0	26	123	60	32	0	15	95	0	0	0	0	351
University of Rochester	0	0	0	0	0	174	0	0	0	0	28	48	103	353
Duke University (North Carolina)	0	0	0	0	0	135	45	10	10	10	14	75	75	374
University of North Carolina	0	0	16	40	51	0	0	163	252	0	2	0	0	554
Bowman Gray School of Medicine	0	0	5	0	0	105	11	0	0	0	0	16	44	181
University of North Dakota	2	0	4	0	0	48	0	13	0	0	0	0	0	73
Ohio State University	1	14	8	177	90	172	275	842	0	0	6	21	71	1 677
University of Cincinnati	0	0	11	0	0	0	0	5	330	0	29	44	110	535
Western Reserve University	1	0	54	175	0	199	17	6	203	42	44	58	69	868
University of Oklahoma	0	1	7	0	0	123	13	0	450	68	5	48	55	770
University of Oregon	1	4	19	4	0	392	0	3	182	0	0	18	64	687
Hahnemann Medical College (Pennsylvania)	0	0	7	0	0	42	0	31	0	0	9	0	0	69
Jefferson Medical College	0	0	27	0	0	0	0	0	0	0	11	9	39	86
Temple University	0	0	0	0	0	300	11	0	68	0	0	0	81	460
University of Pennsylvania	0	0	87	140	0	24	47	0	45	0	86	27	196	652
University of Pittsburgh	2	0	0	0	0	921	0	0	0	122	0	15	121	1 181
Woman's Medical College	0	0	1	0	0	56	0	0	0	0	10	5	9	81
Medical College of South Carolina	0	1	12	0	106	135	13	0	319	5	10	21	32	654
University of South Dakota	5	0	0	0	0	0	5	124	0	2	30	2	1	169
Meharry Medical College (Tennessee)	6	0	8	67	0	10	10	0	0	0	3	10	16	130
University of Tennessee	0	16	30	287	233	128	0	19	0	0	0	0	0	719
Vanderbilt University	0	0	12	0	0	65	0	3	0	0	0	37	62	179
Baylor University (Texas)	0	0	0	0	0	0	0	0	216	0	4	0	0	220
Southwestern Medical College	0	0	0	0	0	73	0	3	15	0	5	0	0	96
University of Texas	1	0	15	60	0	117	30	4	1 160	4	6	24	86	1 507
University of Utah	3	3	159	0	0	146	0	569	89	0	14	13	57	1 053
University of Vermont	0	1	14	0	0	98	20	0	0	0	21	0	0	154
Medical College of Virginia	0	2	11	194	227	159	36	58	950	0	4	41	94	1 776
University of Virginia	0	8	0	0	0	194	0	0	180	0	13	31	72	408
University of Washington School of Medicine	0	2	49	275	240	380	12	2 605	413	21	11	26	27	4 061
West Virginia University	0	0	6	0	66	0	26	0	0	0	0	0	0	98
Marquette University (Wisconsin)	5	39	11	219	0	0	0	0	83	6	10	0	62	435
University of Wisconsin	0	0	23	0	108	87	20	17	144	0	0	13	60	472
Totals	106	1 561	2 720	3 854	2 497	9 195	1 402	9 838	17 654	1 152	1 238	1 786	4,259	57 262
CANADA														
University of Alberta	0	19	21	0	0	0	0	0	192	2	0	0	0	234
University of Manitoba	0	12	0	0	0	350	0	0	54	12	0	66	8	502
Dalhousie University (Nova Scotia)	0	0	0	36	24	19	0	23	190	6	5	55	0	358
Queen's University (Ontario)	0	3	0	0	0	14	0	14	36	4	7	13	4	95
University of Ottawa	2	0	5	0	0	0	0	0	5	0	3	45	5	65
University of Toronto	0	62	41	162	112	25	0	774	105	64	78	0	0	1 423
University of Western Ontario	1	6	43	0	0	51	0	7	0	0	7	0	0	115
Laval University (Quebec)	1	0	0	0	0	0	0	0	0	0	0	0	0	1
McGill University	0	0	0	0	0	0	0	6	0	0	0	0	0	6
University of Montreal	0	0	8	124	0	0	0	0	0	27	0	94	0	253
University of Saskatchewan	0	0	12	0	72	15	50	24	0	0	0	0	0	173
Totals	4	102	130	322	208	474	50	848	582	115	100	273	[illegible]	3 225

TABLE 12 —*Distribution by Sex of Medical Students, and Graduates in the United States and Canada 1950-1951*

	Students		Graduates	
United States	Men	Women	Men	Women
Medical College of Alabama	200	7	49	3
University of Arkansas	330	10	80	2
University of California	264	23	63	8
College of Medical Evangelists	347	27	72	9
University of Southern California	259	18	63	4
Stanford University	225	16	54	4
University of Colorado	* 282	19	62	7
Yale University (Connecticut)	240	22	51	7
Georgetown University (Dist Columbia)	406	22	93	5
George Washington University	323	15	65	7
Howard University	259	29	56	10
Emory University (Georgia)	275	6	62	4
Medical College of Georgia	294	14	73	1
Chicago Medical School (Illinois)	264	9	56	2
Northwestern University	496	28	205	14
Stritch School of Medicine	333	10	77	2
University of Chicago	* 257	20	57	5
University of Illinois	627	38	146	17
Indiana University	513	29	102	4
State University of Iowa	376	19	79	7
University of Kansas	351	16	79	5
University of Louisville (Kentucky)	350	22	86	7
Louisiana State University	402	25	90	7
Tulane University of Louisiana	495	24	121	10
Johns Hopkins University (Maryland)	279	25	65	11
University of Maryland	309	17	92	4
Boston University (Massachusetts)	258	17	56	3
Harvard Medical School	478	31	137	8
Tufts College Medical School	369	18	88	7
University of Michigan	511	33	105	8
Wayne University	253	5	61	1
University of Minnesota	464	24	81	3
University of Mississippi	117	3		
University of Missouri	85	3		
St Louis University	471	4	110	0
Washington University	351	20	92	8
Creighton University (Nebraska)	283	10	69	5
University of Nebraska	319	19	78	4
Dartmouth Med School (New Hampshire)	49	0		
Albany Medical College (New York)	180	13	36	3
State University of New York College of Medicine at New York City	460	34	84	12
University of Buffalo	254	13	63	1
Columbia University	407	50	94	16
Cornell University	311	24	76	11
New York Medical College	429	52	92	20
New York University	445	48	104	15
University of Rochester	259	21	60	6
State University of New York at Syracuse College of Medicine	223	10	44	4
University of North Carolina	115	2		
Duke University	295	16	70	6
Bowman Gray School of Medicine	218	9	58	3
University of North Dakota	65	0		
University of Cincinnati (Ohio)	341	9	78	6
Western Reserve University	293	31	67	9
Ohio State University	379	17	73	3
University of Oklahoma	200	11	60	5
University of Oregon	277	14	66	5
Hahnemann Med College (Pennsylvania)	325	22	71	6
Jefferson Medical College	649	0	161	0
Temple University	466	38	109	13
University of Pennsylvania	484	20	120	9
Woman's Medical College	0	180	0	30
University of Pittsburgh	351	15	78	2
Medical College of South Carolina	229	4	57	0
University of South Dakota	68	5		
University of Tennessee	562	25	144	6
Meharry Medical College	232	13	52	4
Vanderbilt University	201	4	50	4
Southwestern Medical School (Texas)	325	17	60	5
University of Texas	471	24	90	6
Baylor University	334	17	73	5
University of Utah	194	8	48	1
University of Vermont	159	9	35	3
University of Virginia	254	4	71	0
Medical College of Virginia	337	26	69	6
University of Washington	226	16	48	5
West Virginia University	51	5		
University of Wisconsin	259	23	60	11
Marquette University	356	16	81	6
Totals	24 627	1,564	5 697	468
Canada				
University of Alberta	202	14	53	4
University of Manitoba*	275	19	63	4
Dalhousie University (Nova Scotia)	210	11	53	2
Queen's University (Ontario)	260	23	51	1
University of Ottawa	207†	4†	40	3
University of Western Ontario	225	15	54	7
University of Toronto	614‡	58‡	149	25
McGill University (Quebec)	430	27	109	7
University of Montreal	370	28	86	6
Laval University	617	0	137	4
University of Saskatchewan	56	6		
Totals	3 469	214	705	63
Total	28 096	1 778	6 402	531

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* Excludes 62 men and 2 women premedical students

† Excludes 3 men and 2 women premedical students

Excludes 255 men and 27 women premedical students

increase during the past year in the number of additional students for which the medical schools provided instruction

In the category of physicians enrolled for advanced degrees, the number increased from 1,125 to 1,561 Other graduate students working for advanced degrees in the basic medical sciences jumped from 2,094 to 2,720 The total number of graduate students in the United States in these two categories was 4,281 which may be compared with the total of 3,219 last year and the highest prewar total of 1,167, for evidence of the continuing increase in the number of persons pursuing graduate study in the medical sciences

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1905	1 073	4 1	219	4 0
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1925	910	5 0	204	5.1
1926	935	5 0	212	5 4
1927	964	4 9	189	4 7
1928	929	4.5	207	4 9
1929	925	4 4	214	4.8
1930	955	4 4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1 056	4 7	214	4 4
1934	1 020	4.5	211	4.2
1935	1 077	4 7	207	4 1
1936	1,183	5 0	246	4 7
1937	1,118	5 1	238	4 4
1938	1 161	5 4	237	4 6
1939	1,144	5.4	260	5 1
1940	1,145	5 4	253	5 0
1941	1 146	5 4	280	5.3
1942	1,164	5.3	2 9	5 4
1943	1,150	5.1	241	4.6
1944	1,176	5 0	239	4 7
1944 (second session)	1 141	4 6	252	4 9
1945	1,332	5 6	262	5 1
1946 (to May 31)	1 868	8 0	242	4 2
1947 *	2 183	9 1	342	5 4
1948	2 159	9 5	392	7 1
1949	2,109	6.9	612	12.1
1950	1,806	7.2	595	10 7
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* Includes additional classes

TABLE 14 —*Enrolment by Classes of Veterans and Non Veterans in the Medical and Basic Science Schools in the United States, 1950 1951*

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Sophomores	3 694	2 626	6,320	18	352	370	6 690
Juniors	3,966	1 933	5 899	16	348	364	6,263
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In Canada the total number of additional students during the past year was 3,225 When the categories of students that were reported this year for the first time are excluded, the total is 2,271, a definite increase over the total of 1,420 reported in the previous year

TABLE 15.—*Residence of Freshman Medical Students*

Marginal Number		1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 Dist of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana
1	Medical College of Alabama	60*												
2	University of Arkansas School of Medicine			90										
3	University of California Medical School		2		60	1								
4	College of Medical Evangelists			1	22	5				4	1	8	2	1
5	University of Southern California School of Medicine		1		64									
6	Stanford University School of Medicine				50									
7	University of Colorado School of Medicine					68								
8	Yale University School of Medicine		1		5	1	13	1	2	2				
9	Georgetown University School of Medicine				2		7		4				2	1
10	George Washington University School of Medicine	2			9	1	3		17	4		3	1	
11	Howard University College of Medicine	2			1		2		13	1			1	1
12	Emory University School of Medicine	7								10	38			
13	Medical College of Georgia										79			
14	Chicago Medical School		1		4		4						7	1
15	Stritch School of Medicine of Loyola University	1			6	1				1			45	1
16	Northwestern University Medical School		4		9				1		1		37	4
17	University of Chicago The School of Medicine				10							1	26	
18	University of Illinois College of Medicine												169	
19	Indiana University School of Medicine													140
20	State University of Iowa College of Medicine		1			1							3	
21	University of Kansas School of Medicine													
22	University of Louisville School of Medicine													1
23	Louisiana State University School of Medicine													
24	Tulane University of Louisiana School of Medicine	10		6			1			8	2			1
25	Johns Hopkins University School of Medicine	4			3	2	2	2		1	2	2		
26	University of Maryland School of Medicine						1	1		1			1	
27	Boston University School of Medicine				2		3		1					
28	Harvard Medical School	1	2		5		4				1	1	4	
29	Tufts College Medical School						8					1	1	
30	University of Michigan Medical School												1	
31	Wayne University College of Medicine													
32	University of Minnesota Medical School													
33	University of Mississippi School of Medicine													
34	University of Missouri School of Medicine													
35	St Louis University School of Medicine	1	1		9								6	1
36	Washington University School of Medicine			1	4	2	1	1				2	8	1
37	Creighton University School of Medicine				12	2						1		
38	University of Nebraska College of Medicine							1						
39	Dartmouth Medical School			1	1		1	2					2	
40	Albany Medical College						1							
41	State University of New York College of Medicine at New York City						1							
42	University of Buffalo School of Medicine				1		1						1	
43	Columbia University College of Physicians and Surgeons	1	1		3		11						1	1
44	Cornell University Medical College		1		4		3			1			2	
45	New York Medical College Flower and Fifth Avenue Hospitals	1				1	12		1	1	1			
46	New York University College of Medicine						6							1
47	University of Rochester School of Medicine and Dentistry				3		2			1			1	1
48	State University of New York College of Medicine at Syracuse													
49	University of North Carolina School of Medicine													
50	Duke University School of Medicine	1								12	1	1		1
51	Bowman Gray School of Medicine									3	5			
52	University of North Dakota School of Medicine													
53	University of Cincinnati College of Medicine	1			2								1	5
54	Western Reserve University School of Medicine						1							1
55	Ohio State University College of Medicine													
56	University of Oklahoma School of Medicine													
57	University of Oregon Medical School				3							1		
58	Hahnemann Medical College				1			1		1			1	
59	Jefferson Medical College of Philadelphia	1					1	3		1		1	2	
60	Temple University School of Medicine	2			1		2	1		2				1
61	University of Pennsylvania School of Medicine				2	2	2			1				
62	Woman's Medical College of Pennsylvania				3		8	1		1			1	1
63	University of Pittsburgh School of Medicine				1									
64	Medical College of the State of South Carolina													
65	University of South Dakota School of Medical Sciences													
66	University of Tennessee College of Medicine													
67	Meharry Medical College	5		2			1			8	2		3	
68	Vanderbilt University School of Medicine	11		1						7	2			
69	Southwestern Medical School of the University of Texas													
70	University of Texas School of Medicine													
71	Baylor University College of Medicine		3		1	1					1			
72	University of Utah School of Medicine		3									1		
73	University of Vermont College of Medicine						8	1						
74	University of Virginia Department of Medicine									1	1			1
75	Medical College of Virginia				1		1		1		1			
76	University of Washington School of Medicine											2		
77	West Virginia University School of Medicine													
78	University of Wisconsin Medical School									1				
79	Marquette University School of Medicine	1			2								4	3
80	University of Alberta Faculty of Medicine													
81	University of Manitoba Faculty of Medicine													
82	Dalhousie University Faculty of Medicine													
83	Queen's University Faculty of Medicine				1									
84	University of Ottawa Faculty of Medicine													
85	University of Western Ontario Faculty of Medicine													
86	University of Toronto Faculty of Medicine													
87	McGill University Faculty of Medicine				9							1	1	
88	University of Montreal Faculty of Medicine													
89	Laval University Faculty of Medicine													
90	University of Saskatchewan School of Medical Sciences													
	Totals	108	21	102	318	89	100	15	40	77	133	21	331	175
		1	2	3	4	5	6	7	8	9	10	11	12	13

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* Figures are for students in beginning premedical year

† Figures include two freshman classes

in the United States and Canada 1950-1951

14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	
Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U S Territories and Possessions	Canada	Foreign	Totals	Marginal Number
																																							[illegible]	1
																																							99	2
	1					1										1	2				1															2		1	[illegible]	3
1	2		1			2	6	1			1	1			2	1	2	1	1	3	1	6		1		1		2			1	[illegible]				1	2	11	97	4
					1																		1				1								1				63	5
1											1		1			1													1			1				3		3	[illegible]	6
								1			2					4																			9				24	7
1		1		1	1	4	1	1		1					6		9		2	3	1		3	3					1			1						1	66	8
					5	10	1							2	22		39			4			10	4	1						1		1						[illegible]	9
				1	8				2	1					7		5		1	4	2		6				1				2	1	2	6		1		1	91	10
1			1			2	3	1	5	2					6		20	1					3		1		1				2							5	[illegible]	11
		2													1			1									2	1					1						[illegible]	12
																																							79	13
						1									15		28			4			5							1		1							[illegible]	14
		1					5			1	1				2		4		1	11			5									1		2		3			92	15
2	4	2				1	5	1		8	5	2		1	2	1	3	1	1	13	2		3			1	2	3	2			2		[illegible]	3	1	1	2	130	16
	1				2	2		1			1	1			5		7		1	5	1		2									2		1	1	3		2	70	17
																																							109	18
																	2						1															2	[illegible]	19
114							1										1																						121	20
	98									4		1									1																	1	105	21
		87													1		4						1											1					96	22
			176																																				176	23
		1	58			1			15	1							5	1			4		1				2	10						1		3		4	130	24
		1			16	4	3	2	1	1					4		8		1	1			6		1			3			2	2	1	2				1	78	25
				1	73	1				1			1				1			4			5	1					1			1	4			2			100	26
				1		42	2	1						1	1		11			1			8	8														1	73	27
					2	20	1		2	2				1	8	1	27	1		9		1	10	1							1		2					6	113	28
				8		76	1							4	8		1							9															112	29
							157								1		1			1							1									3			165	30
							68																																68	31
							1	116			2						1		3			2				1		1						1					125	32
									61																														61†	33
										45																													4	34
	1	8				3	6	6		29	2				1	1	6		1	23		1	6	1		1		1				9	1	2		5		2	[illegible]	35
1						1	2	3		35	2				1	1	8			3	2		1	1			1					3				1		2	88	36
10	1		1					3		2	4	20										2				4						5			3	4		1	75	37
	1										1	82							1												1					1			88	38
						3								4	1		5						1											2	1				24	39
		1				2									7		39						3	1							1								55	40
						1	1								11		131						1	1							1							1	149	41
1			1			1									8		53		1	2			8															1	74	42
1				2		5	1		1	1		1			96	1	42	2		7			6	1			1		1		1	1			1				[illegible]	43
1			1	2	2	2	1	2		1				1	16		30			1			6	1			1		1		1								81	44
						3									18		81			1			1	5		2												1	129	45
						1									13		99			1			3													1			125	46
1				4	2	4		1							6		20			[illegible]			3								1			1	2			1	70	47
						2									2		69															1				1		2	[illegible]	48
																		59																					59	49
		1			2				1				1		2		2	31	1						8		1	3	1		2	1	4	1					81	50
		1													1		2	34		1	1					2					1		1		1				53	51
								1											35																				36	52
		3					1										1			70			2									1	2					1	90	53
				1		3	2				1	1			2		5			58			2										1					3	81	54
																				150																			150	55
																					80																		80	56
								1			2											60										4				1		1	73	57
							2			1					16		2			1			75	1										1		2			105	58
					1	4			2					2	23		6	2		4	1		107	1								1	2	1	1	1			168	59
					3	1									12		2	1		1	1		95					1	1					1		5		2	135	60
1	1	1				1				1					17		6	1		1			7	1	1			2			4		2	1					[illegible]	61
2		1									1				2		11	2		1			14									2	1	1					50	62
																							100																101	63
																									62														62	64
																										33													33	65
																											146												146	66
		1	3		3		2			1							2	3		3	2		1		4		5	3			8			1				2	[illegible]	67
		4							5												2				2		15	3											[illegible]	68
																												103											103	69
																												163											163	70
			1													3												80				1						1	[illegible]	71
													1															1	44							1		1	[illegible]	72
				2		9									1		3						1	1						21									47	73
		1																1					1								64		4						74	74
		1													1		2														72		2			1		1	[illegible]	75
											2																					65				5	1			76
																																	31						31	77
																				1														83					[illegible]	78
						2	7	4			2				3		3		1	3		1	6			2								54		4			101	79
																																					54		54	80
																																					71	1	[illegible]	81
																																					58		[illegible]	82
																	2																				61		61	83
																	1																				50		[illegible]	84
																																					60		[illegible]	85
																																					149	1	[illegible]	86
						4					1				1	1	8			3		2		1					1			4				1	[illegible]	9	116	87
						1								1			2																				114	3	[illegible]	88
						1								3			2																				155		161	89
																																					[illegible]		[illegible]	90
139	110	114	103	23	121	227	280	140	95	133	31	109	4	20	272	16	835	145	51	405	102	75	581	35	80	47	189	280	54	22	167	117	62	165	23	56	[illegible]	[illegible]	[illegible]	
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	

Distribution of Students by Sex

Classification by sex of all students enrolled in the medical and basic science schools of the United States and Canada for the academic year 1950-1951 is given in Table 12 Graduates of each school are similarly classified in the same table

Table 13 shows the number of women students and graduates and the percentage of women to all students and graduates for each year since 1905 Figures for the years 1905 through 1929 include students of Class A, B, and C schools, those for 1930 and subsequent years represent students of approved schools only

In 1950-1951, women in the medical and basic science schools of the United States totaled 1,564, or 5 9% of all students, while the Canadian schools reported 214 women students, or 6 1% of all students The total number of women students in schools of the United States is 242 less than for the preceding year Furthermore, due to the disproportionate increase in the number of male students, women now comprise only 5 9% of the total, as compared to 7 2% for the preceding year There has been a progressive decline in the total number of women students for the past five years The total of freshman women was 376, or 5 3% of the class, as compared with 387, or 5 5%, last year

The number of women graduates from United States medical schools decreased for the third year The total was 468, or 7 6% of all graduates, as compared with 595, or 10 7%, in 1949-1950

In Canada, women graduates numbered 63, or 7 3% of the total

Dartmouth, North Dakota and Jefferson had no women students and the Woman's Medical College no men students The number of schools with more than 30 women students declined from 15 to nine during the past academic year

Veterans in Medical Schools

Veterans enrolled in medical and basic science schools in the United States in 1950-1951 numbered 14,528, or 55 4% of all students The number of veterans decreased by 2,013, or 10 5%, from the preceding year Seventy-four of the veterans were women

In Table 14 the composition of the student body of medical and basic science schools in this country is recapitulated by classes Veterans comprised 39 9% of the freshman class, or 19% less than in last year's freshman class This is the smallest group of veterans to be enrolled in freshman classes since the end of the war The percentage of veterans in other classes were sophomores 55 4, juniors 63 5, and seniors 65 5

Negro Medical Students

The total number of Negro students enrolled in medical schools in the United States during 1950-1951 was 658, or 2 5% of all students These students were enrolled in 46 schools, with 275 enrolled at Howard University, 245 enrolled at Meharry Medical College, and 138 in other institutions There were 179 freshmen, 169 sophomores, 165 juniors, and 145 seniors

TABLE 16.—*Residence of Freshman Students in Medical and Basic Science Schools in the United States and Canada, 1950-1951*

	Home State	Other State	Territories and Possessions	Canadian	Foreign	Totals
United States						
Medical College of Alabama	56	0	0	0	0	56
University of Arkansas	90	0	0	0	0	90
University of California	69	0	2	0	1	72
College of Medical Evangelists	22	61	1	2	11	97
University of Southern California	64	5	0	0	0	69
Stanford University	50	6	3	0	3	62
University of Colorado	68	16	0	0	0	84
Yale University (Connecticut)	13	52	0	0	1	66
Georgetown University (Dist of Columbia)	4	118	0	0	0	122
George Washington University	17	72	1	0	1	91
Howard University	13	57	0	0	5	75
Emory University (Georgia)	38	34	0	0	0	72
Medical College of Georgia	79	0	0	0	0	79
Chicago Medical School (Illinois)	7	65	0	0	0	72
Northwestern University	37	89	1	1	2	130
Stritch School of Medicine	45	44	3	0	0	92
University of Chicago	20	45	8	0	2	75
University of Illinois	169	0	0	0	0	169
Indiana University	1 0	3	0	0	2	151
State University of Iowa	114	7	0	0	0	121
University of Kansas	98	6	0	0	1	105
University of Louisville (Kentucky)	88	8	0	0	0	96
Louisiana State University	126	0	0	0	0	126
Tulane University of Louisiana	58	65	3	0	4	130
Johns Hopkins University (Maryland)	16	61	0	0	1	78
University of Maryland	73	25	2	0	0	100
Boston University (Massachusetts)	42	30	0	0	1	73
Harvard Medical School	20	87	0	0	6	113
Tufts College Medical School	76	36	0	0	0	112
University of Michigan	157	6	3	0	0	165
Wayne University	68	0	0	0	0	68
University of Minnesota	116	12	0	0	0	128
University of Mississippi	61	0	0	0	0	61*
University of Missouri	45	0	0	0	0	45
St Louis University	29	93	5	0	2	129
Washington University	35	50	1	0	2	88
Creighton University (Nebraska)	20	50	4	0	1	75
University of Nebraska	82	5	1	0	0	88
Dartmouth Med School (New Hampshire)	4	20	0	0	0	24
Albany Medical College (New York)	39	16	0	0	0	55
State University of New York Brooklyn	131	17	0	0	1	149
University of Buffalo	53	20	0	0	1	74
Columbia University	42	78	0	0	0	120
Cornell University	30	51	0	0	0	81
New York Medical College	81	47	0	0	1	129
New York University	99	25	1	0	0	125
University of Rochester	29	40	0	0	1	70
State University of New York Syracuse	69	5	1	0	2	77
University of North Carolina	69	0	0	0	0	69
Duke University	34	47	0	0	0	81
Bowman Gray School of Medicine	34	19	0	0	0	53
University of North Dakota	35	1	0	0	0	36
University of Cincinnati (Ohio)	70	19	0	0	1	90
Western Reserve University	58	20	0	0	3	81
Ohio State University	160	0	0	0	0	160
University of Oklahoma	80	0	0	0	0	80
University of Oregon	60	11	1	0	1	73
Hahnemann Med College (Pennsylvania(	76	28	2	0	0	106
Jefferson Medical College	107	60	1	0	0	168
Temple University	95	33	5	0	2	135
University of Pennsylvania	77	48	0	0	0	125
Woman's Medical College	14	36	0	0	0	50
University of Pittsburgh	100	1	0	0	0	101
Medical College of South Carolina	62	0	0	0	0	62
University of South Dakota	33	0	0	0	0	33
University of Tennessee	146	0	0	0	0	146
Meharry Medical College	5	58	0	0	2	65
Vanderbilt University	15	37	0	0	0	52
Southwestern Medical School (Texas)	103	0	0	0	0	103
Baylor University	80	11	0	0	1	92
University of Texas	103	0	0	0	0	103
University of Utah	44	6	1	0	1	52
University of Vermont	21	26	0	0	0	47
University of Virginia	64	10	0	0	0	74
Medical College of Virginia	72	10	1	0	1	84
University of Washington	65	4	5	1	0	75
West Virginia University	31	0	0	0	0	31
University of Wisconsin	83	2	0	0	0	85
Marquette University	54	43	4	0	0	101
Totals	4 994	2 065	55	4	64	7 182
Canada						
University of Alberta	0	0	0	54	0	54
University of Manitoba	0	0	0	71	1	72
Dalhousie University (Nova Scotia)	0	0	0	68	0	68
Queen's University (Ontario)	0	3	0	61	0	64**
University of Ottawa	0	1	0	59	0	60
University of Western Ontario	0	0	0	60	0	60
University of Toronto	0	0	0	148	1	149**
McGill University (Quebec)	0	37	1	69	9	116
University of Montreal	0	4	0	114	3	121
Laval University	0	6	0	158	0	164
University of Saskatchewan	0	0	0	32	0	32
Totals	0	51	1	884	14	950
Totals	4 994	2 116	56	888	78	8 132

* Figures include two freshman classes

** Figures are for students in beginning premedical year

Geographic Source of Freshman Students

Table 15 shows the residence of students in the 1950-1951 freshman class of each medical and basic science school in the United States and Canada at the time of enrolment Individuals may change residence and often live in states other than those in which they were born Therefore, the home states given in this table are not necessarily either states of birth or of permanent residence Table 15 reports the residence of 950 freshmen in Canadian schools This figure differs somewhat from freshmen enrolment figures given in other tables because Table 15 employs the figures for the first class of premedical students at Queen's and Toronto, since these students are already registered in those schools

The trend toward exclusion of out-of-state students by state and municipally owned schools continued The number of publicly owned schools which did not admit nonresident students increased for the fifth successive year and now totals 17 as compared with 15 in 1950, 13 in 1949, 9 in 1948, 7 in 1947, and none in 1946 Three schools, one less than last year, admitted only one or two nonresidents

Twenty-three schools, one more than last year, admitted more nonresident than resident students

Of the total of 3,473 freshmen students admitted last year by state and municipal schools, 236, or 6.9%, were nonresidents, as compared with 249, or 7.2%, last year, 8.2% in 1948, and 17.4% in 1941-1942

Privately owned schools admitted a total of 3,709 students during the current year, of whom 1,951, or 52.6%, were nonresident This percentage did not differ significantly from the 53.1% reported last year and is nearly identical with the 52.9% reported in 1941-1942

In Table 16 are recapitulated the number of resident students, students from other states, students from the territories and outlying possessions of the United States, Canadian students, and foreign students enrolled in the 1950-1951 freshman class in each school in the United States and Canada

In Table 17 is shown the number of first year medical students per 100,000 population for each state For the nation as a whole there were 4.8 freshman medical students per 100,000 inhabitants The ratio is identical with last year's ratio This is accounted for by the fact that the increase in freshman enrolment was offset by the increase in the total population The 11 states without medical or basic science schools had an average of 4.3 first year students per 100,000 population while those states having such schools had an average of 4.9 freshmen per 100,000

TABLE 17—*Ratio of Freshmen Medical Students to State Populations, 1950 1951*

Numbers of students per 100 000 of population[1] in the medical and basic science schools of the United States

*New Mexico	2.4	Wisconsin	4.9
*Nevada..	2.5	District of Columbia	5.0
*Maine	2.5	Oregon	5.0
*Florida	2.8	Virginia	5.0
*Arizona	2.8	Washington	5.0
California	3.0	Ohio	5.1
West Virginia	3.1	Maryland	5.2
Missouri	3.4	Connecticut	5.3
Alabama	3.5	Iowa	5.3
*Idaho	3.6	*Montana	5.3
North Carolina	3.6	Arkansas	5.4
Illinois	3.8	Tennessee	5.5
New Hampshire	3.8	Kansas	5.6
South Carolina	3.8	*New Jersey	5.6
Kentucky	3.9	New York	5.6
Georgia	4.0	Pennsylvania	5.6
Michigan	4.4	Vermont	5.9
Indiana	4.5	Colorado	6.7
Mississippi	4.5	Louisiana	7.2
Oklahoma	4.6	South Dakota	7.2
*Delaware	4.7	Utah	7.9
Massachusetts	4.9	*Wyoming	8.0
Minnesota	4.9	Nebraska	8.1
*Rhode Island	4.9	North Dakota	8.3
Texas	4.9		

* State with no medical school.

1 1950 Census of Population, Preliminary Counts PC 3 No 10 Feb 16 1951 Washington D C

There were 56 freshman students, 21 less than last year, from the United States' territories and possessions One of these students was enrolled in a Canadian school, the remainder in the United States Only four Canadians, 18 less than last year, were admitted by schools in the United States

Sixty-four other foreign students, seven more than last year, were enrolled in schools in the United States Of the 950 students entering Canadian schools, 51, three more than last year, came from the United States Canadian schools enroled 14 freshmen from other foreign countries

Required Internships

Only six schools in the United States and four in Canada require that their students complete an internship These schools are listed in Table 18 However, for many years more than 99% of all graduates have voluntarily served an internship and a majority have had additional hospital training before entering practice

In the last year, Northwestern University discontinued the required internship and Ottawa University joined the list of Canadian schools requiring it Duke University gives the M D degree at the end of the four year medical course but requires its students to sign a written agreement that they will spend two years training in a hospital or laboratory before beginning practice The other schools in this list withhold the M D degree until an internship has been completed Several schools permit substitution of a year of laboratory work for the internship

The number of United States students enroled in intern years required by their schools is given for each year since 1930-1931 in Table 8

TABLE 18—*Medical Schools Requiring an Internship*

United States

College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Chicago Medical School
University of Minnesota Medical School
Duke University School of Medicine

Canada

University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Ottawa Faculty of Medicine
University of Montreal Faculty of Medicine

Degree not withheld until internship completed.

One year of internship, as a prerequisite to licensure, is required by the licensing boards of 24 states, the District of Columbia, Alaska, Hawaii, Virgin Islands, and Puerto Rico The internship requirement was instituted during the past year by Colorado, Kansas and Guam, it was discontinued by Montana and the Canal Zone Those licensing boards which require an internship and the 15 boards which specify a rotating internship are indicated in Table 19

Licenses of candidates from schools which require an internship are withheld until completion of the internship by five states (Connecticut, Maryland, Missouri, Texas, and Virginia) whose laws do not otherwise require internships

Internships are required by certain states, in addition to those listed in Table 19 for graduates of schools outside the United States and Canada and for candidates seeking licensure by reciprocity or endorsement

Hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association are generally acceptable in those states requiring an internship for licensure The current list of approved internships will be published in the Sept 29, *1951, issue of* THE JOURNAL

TABLE 19—*Medical Licensing Boards Requiring a One Year Internship**

Alabama
Arizona
Colorado
Delaware [1]
District of Columbia
Idaho
Illinois [1]
Iowa [1]
Kansas
Michigan [1]
Nevada
New Hampshire
New Jersey [1]
North Dakota [1]
Oklahoma [1]
Oregon [1]
Pennsylvania [1]
Rhode Island [1]
South Dakota
Utah
Vermont [1]
Washington [1]
West Virginia
Wisconsin [1]
Wyoming [1]
Alaska
Guam
Hawaii [1]
Puerto Rico [1]
Virgin Islands

* Some other states require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants

[1] Internship must be a rotating service

Preprofessional Requirements

The minimum requirement of the Council on Medical Education and Hospitals for admission to approved medical schools since 1918 has been two years of college training In 1938 the Council recommended that at least three years of college work be required of all candidates for admission All state licensing boards require that an applicant for licensure present evidence of having completed at least two years of premedical study in college California, the last state to institute this requirement, enacted a bill during the present year requiring two years of college work for present graduates and three years for graduates after Jan 1, 1955

Seventy-seven of the 79 medical and basic science schools in the United States require three or more years of premedical study Five of the Canadian schools have a similar requirement Nine schools, Georgetown, Chicago Medical School, Johns Hopkins, Tufts, New York Medical College, Cornell, Vanderbilt, Montreal, and Laval, require a bachelor's degree Georgetown, however, requires only three years of college work from veterans Cornell and Vanderbilt will accept students with three years of college work, provided their colleges will grant them a bachelor's degree on the successful completion of the first year of medical school

Of the freshmen who entered medical school in the United States during the past year, 5,249, or 73 1% had baccalaureate degrees, 408, or 5 7%, had attended college four years but had received no degree, 1,437, or 20 3%, had had three years of college work, and only 63, or 0 9%, had had only two years of college

College Record of 1950 Freshman Class

In last year's Educational Number, attention was called to the fact that, while medical schools have tended to raise their qualitative standards for admission in recent years, serious misconceptions exist in many quarters concerning the qualifications that a student must possess to gain admission to medical school Thus it was pointed out that statements had appeared in the public press to the effect that students who do not maintain a straight "A' average in college have little or no chance of being admitted to medical school To correct such misconceptions information was obtained and published in last year's report as to the number of students entering medical school in the year 1949-1950 whose college grade point average was less than 'B minus " Seventy-four schools were able to furnish this information Of these, 54 admitted a total of 592 students, or 9 1% of the freshmen in the 74 schools reporting, whose college averages were less than "B minus "

This year, in an attempt to define the situation more completely, schools were asked to report the number of freshmen entering medical school during the year 1950-1951 whose college averages were less than "B minus" and the number whose averages were higher than "B plus " Seventy of the 79 medical and basic science schools in the United States were able to provide this information Fifty-eight of the 70 schools admitted one or more students with college averages of less than "B minus " The highest number in any one school was 82 The total number of such students was 1,181, or 18 6%, of the freshmen in the 70 schools reporting

All 70 schools admitted students with college averages of better than "B plus " No school, however, reported that all its entering students had records better than "B plus " The total number of such students was 2,519, or 39 6%, of the freshmen in the 70 schools reporting

From this study it can be seen that approximately 40% of the students entering medical school last year had "A" averages, approximately 40% had "B" averages, and almost 20% had averages of "C" or lower in their college work

Official statistics compiled by the Association of American Medical Colleges from data supplied by all medical schools in the United States show that there was a drop of more than 2 000 in the total number of students that applied to the medical schools for admission to the class that entered medical school in the year 1950-1951, as compared with the preceding class [1] The drop was from 24,434 individuals applying for admission in 1949-1950 to 22,279 applying for the class entering in 1950-1951 As already noted, the number of students who actually enrolled in the 1950-1951 freshman class was 7,182 From these figures it can be computed that one out of every 3 11 applicants was successful in entering medical school In the preceding year the ratio was one out of every 3 47 applicants

It is well known that many of the 22,279 persons who sought to enter medical school last year were repeaters who had tried in one or more previous years to gain admission Thus the figure 22,279 cannot be taken as representing a single annual crop of college students who had just completed their premedical education Just how many repeaters are included among the 22,279 applicants is not known It is hoped that a study to obtain this important information will be made in the next few months with respect to those who sought to enter medical school in 1951-1952

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[1] Stalnaker J M Study of Applicants for Admission to United States Medical Colleges—Classes Entering in *1950-1951 Medical Education* **20**: 1-6 (Jan) 1951

When taken together, the sharp increase in the number of students with "C" averages or less who were admitted to the 1950-1951 freshman class and the definite drop in the total number of applicants for that class would seem to indicate that the large pool of unusually able applicants with which most medical schools have been favored since the end of the war may be shrinking This trend is not surprising, since it has been generally recognized that the experience of recent years with respect to the number of and quality of applicants has been an abnormal one brought about by the large number of men from several college generations whose education was interrupted by the war and who on discharge from service more or less simultaneously resumed and completed their premedical education and sought admission to medical school It is likely, too, that this number was further augmented above the normal expectancy by students who would not have sought a professional education had not the benefits of the G I Bill of Rights been available

As the backlog of veterans is further reduced it may be expected that the number of applicants will be still further reduced until something approaching a stable plateau is reached The contemplated study of the number of applicants applying to medical school each year for the first time will be of great value in the early detection of this plateau

Despite the expected further reduction in the number of applicants and the further increases in enrolments that are expected, it is not likely that there will be an insufficient number of candidates with at least minimum qualifications to fill the available places in the freshman classes in the medical schools in the years ahead It is likely, however, that the schools will have to admit more students whose scholastic records are borderline from the point of view of offering promise of the capacity to do satisfactory work in medical school As a consequence the rate of failures in medical school which has dropped significantly in the last few years may be expected to rise

Those schools that restrict admissions to residents of a single state will probably have the greatest difficulty in finding suitable students to fill all their available places In fact, it may be predicted that some of these schools will have to relax their restrictions if they are to maintain the same quality of student body that they have enjoyed in recent years

The 1951 Freshman Class

The 1950 freshman class numbering 7,182 students was the largest ever enrolled in medical schools in the United States Figures submitted by the schools indicate that the 1951 freshman class will be even larger and will total close to 7,400 By June of this year the schools had already selected 7 157 students This number includes 1,639 male veterans (22 9%), 5,135 other men (71 8%) and 383 women (5 3%) Six of the women were veterans

Canadian medical schools up to June had enrolled 449 students, of whom 415 were men and 34 were women Total expected enrolment is 931

Major Developments in the Medical Schools

Each medical school was asked to describe briefly major new developments during the past year that might be of general interest The developments that were reported may be summarized under the headings of curricular changes, institutional affiliations organization and administration and miscellaneous

Thirteen schools instituted major changes in the curriculum of one or more years These schools included Alabama, Buffalo, Cornell, Louisville, Mississippi, Nebraska, North Dakota, Northwestern, Pennsylvania, South Carolina, St Louis, Utah, and Vermont As was the case with schools reporting changes last year almost all reported that the changes were effected to reduce the amount of didactic instruction in the clinical years, to make possible the earlier introduction of clinical subjects or to promote closer correlation or integration between departments

Under the heading of organization and administration, several schools reported the appointment of full-time faculty members in clinical departments that had previously been staffed entirely by part-time personnel Three schools organized departments of public health and preventive medicine as independent units for the first time or completely reorganized existing departments Louisville changed the name of its department to the department of community health, Virginia separated its department of preventive medicine and bacteriology to establish a department of social and environmental medicine and a department of microbiology North Dakota organized a department of preventive medicine and public health for the first time

Only a few new hospital affiliations were announced Temple established an affiliation with the Episcopal Hospital of Philadelphia, North Dakota with the Deaconess and St Michael's Hospitals in Grand Forks, N D , and South Dakota with the Veterans Administration Hospital at Sioux Falls, S D The State University College of Medicine at New York City expanded its services at Kings County Hospital, and Stanford added a pediatric service to its services at the San Francisco Hospital

In the following summary of construction programs, an effort has been made not to include in any category projects reported in the same category last year A number of schools reported that new medical school buildings proper or major additions to their existing buildings were under construction or were completed during the past year Schools reporting actual new construction were Buffalo, California at San Francisco, Indiana, Kansas, Meharry, North Carolina, Oklahoma, Southern California, South Dakota, and Virginia

Stanford and Indiana reported extensive remodeling or renovations of existing buildings

The following schools reported that additions to existing clinical facilities or the construction of new clinical facilities owned and operated by the schools were under construction California at San Francisco, University of Chicago, Indiana, Kansas, Minnesota, North Carolina, and Woman's

The following special building projects were reported as being under way or completed Stritch, a cancer research laboratory, Louisville, a virology laboratory, St Louis, a cancer research institute, North Dakota, research laboratories, Temple, a cancer research laboratory, and Utah, a radiobiology laboratory

The following schools in addition to projects that may be listed above, have indicated that they are in the process of planning the early construction of various units for which funds are available Some of these projects were reported in the same category last year Arkansas, State University of New York at New York, Louisiana, Mississippi, State University of New York at Syracuse, Oregon, South Carolina, Southwestern, Temple, Wayne, and West Virginia

Figures as to the actual or expected cost was submitted for only about one-third of the projects listed above The figures that were supplied this year for the first time totaled slightly more than 60 million dollars

The following miscellaneous developments appear to be of most general interest Cornell received a grant of $344,000 from the Commonwealth Fund for an experiment in the teaching and practice of comprehensive medicine The purpose of this new undertaking is to provide continuous medical care for a portion of the patients who visit the outpatient department of the New York Hospital and to make it possible for senior students to be associated with the same patients over a relatively long consecutive period of time Families as well as individuals will be cared for, and there will be an extension of services into the home

Buffalo received a grant of $300,000 a year from the State Department of Health for the operation of a chronic disease research institute The school also received a grant of $24,000 from the State Department of Health for a full time director of postgraduate education and the regional hospital programs sponsored by the school

Kansas received a grant of $30,000 a year for a minimum period of five years to support its program of postgraduate education and also received a grant of $100,000 to construct a continuation center

Utah has initiated a program of postgraduate medical education to serve the states of Utah, Nevada, Arizona, and Idaho

Oklahoma initiated a program of postgraduate medical education in cooperation with the State Medical Association

South Dakota was successful in sponsoring a new state-pound law which makes unclaimed dogs available to the medical school The school also sponsored the organization of the South Dakota Medical School Endowment Association which began an active campaign for funds during the past year

Boston reported that several of the heads and other members of its major clinical departments had formed a group practice organization as a nonprofit undertaking

Northwestern reported receipt of an endowment fund of $750,000 for its department of medicine The College of Medical Evangelists received a gift of $340,000, and Southern California, a gift of $350,000 Stritch reported that at a benefit dinner sponsored by Cardinal Stritch, for whom the school is named, a fund of approximately $250,000 was raised

Preparation for General Practice

The need for the continuing production of physicians who will have a primary interest in serving as family physicians or general practitioners continues to hold the attention of many medical schools Thus 54 schools in the United States report that they are sponsoring one or more programs designed to interest and prepare students for careers in general practice

Several schools report that their entire educational program has been designed with the primary purpose of preparing students adequately for general practice Special activities which are being conducted by the medical schools to stimulate interest in general practice include scholarship programs, home medical service and family advisor programs, courses or series of lectures on general practice by outstanding general practitioners and the organization of general medical clinics in which the conditions of general practice are simulated A number of schools attempt to develop the students interest through a counseling program Other schools have affiliated with groups of rural hospitals and have found that recent graduates have been attracted to practice in the communities in which these hospitals are located

Nineteen schools have established preceptorships whereby students work with general practitioners in outlying communities In nine schools the preceptorship is a required part of the undergraduate course In the other 10 it is elective The total number of students who served preceptorships last year was 713 In 14 schools the preceptorship comes during the summer following the third year or in the fourth year In the other schools it comes in the summer at the end of the second year or during the third year The duration of the preceptorship varies from one week to four months In five schools it is less than one month, in six schools it is one month to six weeks, and in the remaining eight schools it is two to three months

Twenty-five schools are sponsoring internships, and 19 are sponsoring residencies in their affiliated hospitals that are specifically designed for prospective general practitioners

Vacancies on Instructional Staffs

The number of vacant or newly created full time positions for the year 1951-1952 that the medical schools had been unable to fill up to June 1951 is somewhat lower than the comparable figures for the preceding two years The total for the present year for the schools in the United States is 235 In 1950 it was 281, and in 1949 it was 441

For the coming academic year, 20 schools, the same number as last year, report no unfilled positions Fifty-one schools had a total of 157 unfilled positions in the preclinical departments Twenty-seven schools reported a total of 78 unfilled positions in the clinical departments Last year there were 175 vacancies in preclinical departments and 104 in clinical departments

The number of unfilled positions are shown by departments in Table 20 There has been no significant change in the relative number of vacancies among the preclinical departments except in biochemistry, which last year had the second highest number of vacancies and this year has the lowest number

In the clinical departments vacancies in psychiatry and general surgery are relatively fewer than a year ago, and those in pediatrics are relatively more numerous Otherwise no significant changes are noted

In Canada seven medical schools reported no unfilled positions Four schools reported a total of 15 unfilled positions, of which 11 are in the preclinical departments and four in clinical departments

Financial Support of Medical Schools

TABLE 20—*Total Number of Unfilled Full Time Positions by Departments in the Medical and Basic Science Schools of the United States, 1951 1952*

	Number of Unfilled Positions
Preclinical Departments	
Anatomy	36
Physiology	34
Pathology	32
Microbiology	21
Pharmacology	18
Biochemistry	16
Total	157
Clinical Departments	
Pediatrics	15
Internal Medicine	13
Preventive Medicine and Public Health	9
Obstetrics and Gynecology	8
Psychiatry	8
Anesthesiology	7
Radiology	7
Physical Medicine and Rehabilitation	4
General Surgery	3
Dermatology	1
Oncology	1
Ophthalmology	1
Orthopedic Surgery	1
Total	78
Grand Total	235

The budgets of the medical and basic science schools in the United States for the academic year 1951-1952 total approximately $74,350,000 This sum represents an increase of $6,850,000 over the figures reported for the previous year Since the number of schools reporting and the methods used by the schools in reporting their budgets are the same as for last year, no corrections to arrive at a net increase are necessary this year

This year's figures include the cost of plant maintenance and the cost of operating the library for all but two schools As was the case last year, all schools that carry a charge for general university administration in their budgets were able to subtract this item Such charges are not included in the $74,350,000 Also not included are a variety of items which total just over a million dollars for such activities as postgraduate education, scholarships, fellowships, public relations and fund raising that some schools reported separately from their regular budgets

The figure $74,350 000 does not include grants for research or for special teaching projects from outside agencies or any significant portion of the cost of operating the teaching hospitals affiliated with the medical schools It does include a total of approximately $3,250,000 that the medical schools will spend toward certain activities in their affiliated hospitals This sum, which is approximately $350,000 greater than in the previous year, is largely made up of salaries of professional and technical personnel on hospital staffs, the cost of operating special laboratories and in a few instances contributions to the operating budgets of hospitals and dispensaries used by the medical school for teaching purposes As in previous years no attempt has been made to compute the direct and frequently substantial contributions that a number of teaching hospitals make to the educational programs of their affiliated medical schools or to estimate the value of the services contributed by the unpaid members of the teaching staff who in a number of schools are still responsible for a major part of the instruction, especially in the clinical departments

It has already been noted under the section on major developments in the medical schools that during the past year the schools were engaged in constructing new facilities of various types and that the cost of only one third of these projects totaled more than 60 million dollars

The schools estimate that receipts from tuition fees during the coming year will total $16,300,000, or 21 9% of their budgets Last year tuition fees provided $15,200,000, or 22 5% of the budgets The number of schools unable to match student fees dollar for dollar in their basic budgets with funds from nonstudent sources remains at eight

Thirty medical schools, as compared to 24 last year, report budgets of over one million dollars for the coming academic year Four of these schools will have budgets of over two million Fourteen of the four year schools report budgets of less than $500,000 as compared with thirteen last year

The schools have estimated that during the academic year 1951-1952 they will receive from outside agencies a total of 31 million dollars in grants for research and $4,250,000 in grants for special teaching activities Funds received in these categories last year totaled 30 million dollars and $4,400,000, respectively All but one school received funds in both categories Among the four year schools the range in grants for research varied from $17,000 to $2,900,000 Seven schools received more than one million dollars in grants for research, and 12 other schools received between $500,000 and one million Among the four year schools special grants for teaching ranged from $24,000 to $211,000

Adding the research and special teaching grants that the medical schools expect to receive from outside agencies during the coming academic year to their budgets for this period gives a total of $109,600,000 that will be expended directly by the medical schools in the coming year in support of their total programs These programs include many activities in addition to the instruction of undergraduate students As remarked upon last year, Dr John E Deitrick, Director of the Survey of Medical Education, has emphasized that a modern medical school supports a broad program of instruction, research and service In the section of this report on the responsibilities of medical schools for other students, it is clearly shown that medical schools are providing directly for the educational needs of large numbers of other students in addition to undergraduate medical students Almost one-third of the total sum that will be expended by the medical schools next year is definitely earmarked for research and a smaller portion for the support of clinical activities Additional direct and indirect support of research and clinical services will undoubtedly be provided by the basic budgets of many schools although the actual amount cannot be estimated

Earlier this year the Surgeon General's Committee on Medical School Grants and Finances published its report of a study of the expenditures and needs of the medical schools during the academic year 1947-1948 In that year the committee reported the seventy-nine medical schools spent a total of $53,451,000 for maintaining basic operations This sum includes essentially all of the items represented in the budgets of the medical schools as reported in the Educational Number except for the expense of maintaining clinical facilities, research supported by university funds that is budgeted separately and a few minor activities that are relatively insignificant in terms of total expenditures In the same year the committee reported that the medical schools spent a total of $17,100 000 for separately budgeted research This sum was largely made up of research grants from outside agencies but also included some university funds The total expenditure during the academic year 1947-1948 for basic operations and for separately budgeted research was $70,551,000

After evaluating the unmet needs of the medical schools the Surgeon General's Committee concluded, "We estimate that the unmet needs pointed out above could be financed only by the expenditure of about 40 million dollars a year more than the medical schools are now spending for education and research This estimate is based on the amount cited to us by the medical schools This figure may be substantially discounted as representing the wishes and aspirations of those who have a sharp interest in securing additional funds Nevertheless, we have no doubt whatever that the additional annual income required by medical schools to perform their functions adequately is measured in tens of millions and not millions of dollars

"In considering this estimate it should be borne in mind that the medical schools could not absorb an additional 40 million dollars a year immediately This figure is a general measure of the level to which operating expenditures of medical schools should rise over a period of years"

As reported above, the total sum that the medical schools will have to expend for education and research during the year 1951-1952 is approximately $109,600,000 While the items covered by this estimate probably differ slightly from the items included by the Surgeon General's Committee in arriving at the figure of $70,551,000 as the total expenditure by the medical schools in 1947-1948 for basic operations and separately budgeted research the differences are minor except for the inclusion in the 1951-1952 estimate of the $3,250,000 that the schools will spend to support clinical facilities When this item is subtracted, the total sum available to the medical schools for the coming year becomes $106,350,000, a figure which can be compared with the 1947-1948 total of $70,551,000 for the purpose of estimating the progress that the medical schools have made in securing the additional financial support that the Surgeon General's Committee estimated as being needed It can be seen that the schools will have available in 1951-1952 approximately 36 million dollars more than they expended four years earlier during the period covered by the study of the Surgeon General's Committee

It is thus evident that in this four year period the goal of 40 million dollars has almost been met In attempting to calculate the extent to which this increase has relieved the financial stress on the medical schools, however, several points must be carefully weighed In the first place it must be recognized that not all medical schools have shared equally in this increase As pointed out in previous reports, tax supported schools on the whole have fared better in recent years than privately supported schools although a number of the latter have made very substantial gains during the period covered Part of the increase has been neutralized or nullified by the continuing rise in costs in general Some of the increase has been used to support new or expanded undertakings The estimates of the Surgeon General's Committee were based on what would be needed to support properly the programs of the medical schools at their 1947-1948 level Finally, it must be pointed out that approximately 14 million dollars of the 36 million increase is specifically earmarked for research and, therefore, is not available to the medical schools to bolster other phases of their programs in need of additional financial support

Even when allowance is made for these many factors, it is clear that very substantial progress has been made nationally in increasing the funds available to the medical schools and that the gap between available funds and needs, at least as forecast in 1948, has been greatly narrowed With the increasing public understanding of the needs of the medical schools and with the National Fund for Medical Education and the American Medical Education Foundation now giving active assistance, it does not seem too much to hope that this gap will be further narrowed with the passing of each succeeding year This statement should not be taken, however, to indicate that once the goal of 40 million dollars has been reached that all the needs of the medical schools will have been met for all time Expanding programs and continuing efforts to improve quality alone will lead to the need for upward revisions of earlier estimates If inflation and rising costs persist, they will, of course, accentuate the need for such revisions

None of these considerations, however, can take away from the substantial gain that has been made in securing better support for medical education and the clear fact that the needs of medical education are being recognized and are not going unheeded by the American people

In the period immediately after the war when medical schools were suddenly faced with the urgent need for immediate additional funds to maintain their programs, it was necessary to present the needs of the medical schools forcefully and dramatically This need inevitably led to well-intentioned but sometimes overly pessimistic public statements depicting the disaster that was impending for individual schools or for the medical schools as a group Unfortunately, some of the more extreme fears and predictions that were voiced in earlier years are still being echoed and at times by those who should be capable of calmer and more considered judgments There can be no question that some schools still have large unmet needs It is only proper, however, that the public be given an honest report of the progress that is being made In the long run such a policy would seem to be essential if the medical schools are to hold the public's confidence and support

Student Fees

Resident tuition fees in the 72 medical schools and the seven schools of the basic medical sciences in the United States for the academic year 1951-1952 will range from $97 to $867 except for one school which will charge a fee of $1,288 The median fee will be $660 as compared with $600 last year The average fee will be $596 as compared with $554 in 1950-1951

TABLE 21 —*Range of Annual Fees in Medical and Basic Science Schools in the United States and Canada*

	1950-1951 Number of Schools		1951-1952 Number of Schools	
	United States	Canada	United States	Canada
Less than $100	1		1	
$100 to 199	3		3	
200 to 299	7		7	
300 to 399	11	4	8	6
400 to 499	8	4	10	5
500 to 599	9	3	7	
600 to 699	11		6	
700 to 799	17		14	
800 to 899	12		23	
1 000 and over			1	
Total	79	11	79	11

Twenty-eight schools have announced increases in fees ranging from $10 to $210 One school has increased its tuition fee $550

The average tuition fee now stands at 158% of the average tuition fee in 1939-1940 which was $378 As pointed out in the preceding section, however, tuition fees will provide only 21 9% of the cost of operating the medical schools during the forthcoming year

In Table 21 the 19 medical schools and schools of the basic medical sciences in the United States and Canada have been arranged in groups according to the tuition fees that will be charged resident students for the session 1951-1952 This table also gives comparable statistics for the year 1950-1951 The figures in this table represent one-fourth of the total tuition fee charged for the four years of the medical school course including minor charges such as those for matriculation, breakage, diploma, and graduation Thirty-six schools in the United States make an additional charge for nonresident students In 34 schools these charges range from $12 to $600 One school charges nonresident students an additional fee of $1,070 and another an additional fee of $2,130

Cost of Attending Medical School

In last year's Educational Number it was reported that estimates provided by the medical schools indicated that the minimum financial outlay experienced by a student in attending medical school for an academic year ranged from $567 to $2,252 with a median of $1 473 The average cost to a student for one year was reported to range from $800 to $2,500 with a median of $1,800

Although the increase in tuition fees and the rise in living costs during the last year have probably added to these figures, it seemed likely that the estimates prepared last year were still sufficiently current so as to make unnecessary a further inquiry this year with respect to the cost of attending medical school

An effort was made, however, to determine what percentage of students in the present first, second, and third year classes would be unable to finance their medical education without the aid of summer employment Thirty-nine medical schools in the United States submitted this information for their freshman classes 40 for their sophomore classes, and 34 for their junior classes

Of the 3,468 freshmen in the schools included in this study 1,663, or 47 9%, reported they could not continue to finance their medical education without the aid of summer employment For the sophomore class the figure was 1,585 of 3,220 students, or 49 2%, and for the junior class 1,237 of 2,958 students, or 41 8%

These figures indicate the high percentage of medical students who feel they must rely in part or in whole on their own earnings to meet the costs of their medical education Since it is known that some additional students who do not fall in the category of being unable to finance their medical education without summer work also seek employment to ease the financial burden on their families, the total figure of those who earn part or all of their medical education must be larger than that reported here

The above figures are of particular significance in discussions with respect to the adoption of an accelerated program of medical education or of a program of lengthened academic years with relatively short summer vacations In considering these problems, however, it would be desirable to have more precise studies of the amount of financial aid obtained by summer employment than could be attempted in this preliminary survey

Private and Governmental Medical Schools

The medical schools in the United States are listed in Table 22 according to the nature of their ownership There were no changes of ownership during the last year Forty-one schools are owned by private, nonprofit corporations exempt from federal taxation, 35 schools are owned by states and three by municipal governments

Enrolments in private schools during 1950-1951 numbered 14,191, or 54 2% of the total for the country The enrolment in state and municipal schools was 12,000 or 45 8%

Freshmen students in private schools numbered 3,709, or 51 7% of the total, and 3,473, or 48 3%, in the state and municipal schools

Statistics with respect to resident and nonresident student enrolment in state and municipal as compared with private schools are presented in the section on the geographic sources of freshman students

TABLE 22 —*Medical Schools Classified by Ownership, 1950 1951*

Privately Owned

1 College of Medical Evangelists (Calif)
2 Stanford University School of Medicine
3 University of Southern California School of Medicine
4 Yale University School of Medicine (Conn)
5 *Georgetown University School of Medicine (D C)*
6 George Washington University School of Medicine
7 *Howard University College of Medicine*
8 Emory University School of Medicine (Ga)
9 *Chicago Medical School (Ill)*
10 Northwestern University Medical School
11 *Stritch School of Medicine of Loyola University*
12 University of Chicago The School of Medicine
13 *Tulane University of Louisiana School of Medicine (La)*
14 Johns Hopkins University School of Medicine (Md)
15 *Boston University School of Medicine (Mass)*
16 Harvard Medical School
17 Tufts College Medical School
18 St Louis University School of Medicine (Mo)
19 Washington University School of Medicine
20 Creighton University School of Medicine (Nebr)
21 Dartmouth Medical School (N H)
22 Albany Medical College (N Y)
23 Columbia University College of Physicians and Surgeons
24 Cornell University Medical College
25 New York Medical College Flower and Fifth Avenue Hospitals
26 New York University College of Medicine
27 University of Buffalo School of Medicine
28 University of Rochester School of Medicine and Dentistry
29 Duke University School of Medicine (N C)
30 Bowman Gray School of Medicine of Wake Forest College
31 Western Reserve University School of Medicine (Ohio)
32 Hahnemann Medical College and Hospital of Philadelphia (Pa)
33 Jefferson Medical College of Philadelphia
34 Temple University School of Medicine
35 University of Pennsylvania School of Medicine
36 University of Pittsburgh School of Medicine
37 Woman s Medical College of Pennsylvania
38 *Meharry Medical College (Tenn)*
39 Vanderbilt University School of Medicine
40 *Baylor University College of Medicine (Tex)*
41 Marquette University School of Medicine (Wis)

State Owned

1 Medical College of Alabama
2 University of Arkansas School of Medicine
3 *University of California School of Medicine*
4 University of Colorado School of Medicine
5 Medical College of Georgia
6 University of Illinois College of Medicine
7 Indiana University School of Medicine
8 State University of Iowa College of Medicine
9 University of Kansas School of Medicine
10 Louisiana State University School of Medicine
11 University of Maryland School of Medicine
12 University of Michigan Medical School
13 University of Minnesota Medical School
14 University of Mississippi School of Medicine
15 University of Missouri School of Medicine
16 University of Nebraska College of Medicine
17 State University of New York College of Medicine at New York City
18 State University of New York at Syracuse *College of Medicine*
19 University of North Carolina School of Medicine
20 University of North Dakota School of Medicine
21 Ohio State University College of Medicine
22 University of Oklahoma School of Medicine
23 University of Oregon Medical School
24 Medical College of the State of South Carolina
25 University of South Dakota School of Medical Sciences
26 University of Tennessee College of Medicine
27 Southwestern Medical School of the University of Texas
28 University of Texas School of Medicine
29 University of Utah School of Medicine
30 University of Vermont College of Medicine
31 Medical College of Virginia
32 University of Virginia Department of Medicine
33 University of Washington School of Medicine
34 West Virginia University School of Medicine
35 University of Wisconsin Medical School

Municipally Owned

1 University of Louisville School of Medicine (Ky)
2 Wayne University College of Medicine (Mich)
3 University of Cincinnati College of Medicine (Ohio)

Budgets of state and municipal schools for 1951-1952 will total approximately $35,360,000, for the private schools $38,400,000

Tuition fees of state and municipal schools for residents of their own states will vary in 1951-1952 from $97 to $804 with a median of $405 For private schools tuition fees will range from $484 to $1,288 with a median of $800

New Medical Schools

Widespread interest in the development of new medical schools continued to be demonstrated during the past year In several states and Puerto Rico real progress was recorded in establishing new schools or in expanding schools of the basic medical sciences *to a full four-year* program

The University of Puerto Rico School of Medicine admitted its first freshman class in the fall of 1950 This school is planning the development of a four-year program During the coming academic year the school will have both a freshman and a sophomore class enrolled.

The University of California in Los Angeles *announced that it would admit its first freshman class in the fall of 1951*, two years earlier than originally planned

Mississippi is proceeding actively with the development of a four-year medical school at Jackson as authorized by the 1950 session of the Mississippi State Legislature Plans for the construction of the medical school building and hospital are nearing completion *It is hoped that ground can be broken in the fall of 1951 and that the first third year class will be enrolled* in the fall of 1953

The 1951 session of the West Virginia State Legislature authorized the expansion of the West Virginia University School of Medicine to a four-year program and passed a soft drink tax to finance the development and operation of the school The legislature empowered the governor to *decide the location of the school* In June, the governor *designated Morgantown as the site Plans for the medical school building* and teaching hospital are now being prepared

In New Jersey, the Medical College Commission, appointed by the governor in 1950, reported to the 1951 Legislature that a medical school should be established and recommended its location in New Brunswick It is reported that a special session of the New Jersey Legislature will be called this fall to make a definite decision on the establishment and location of the medical school and to provide for its financing

In Rhode Island, the legislature voted to establish a commission to study the feasibility of developing a medical school as part of the University of Rhode Island

In Massachusetts, the governor has appointed a committee to investigate the feasibility of establishing a medical school as a department of the University of Massachusetts

The 1951 Florida legislature passed an *act authorizing* the state to *make per capita payments to the first approved medical school* in Florida to begin operation *The possibility* of establishing a medical school is being seriously studied by the University of Miami

Expansion to a four year program is still under active study by the basic science school of the University of Missouri

Yeshiva University in New York City has announced its intention to develop a medical school and is at present engaged in raising the necessary funds

In Canada, the University of British Columbia School of Medicine admitted its first freshman class in the Fall of 1950 The school, which will be a four-year school, will enrol a freshman and sophomore class in the coming academic year

Foreign Medical Schools

In February, 1950, the Council on Medical Education and Hospitals and the Association of American Medical Colleges published their first list of foreign medical schools whose graduates they recommend be given consideration on the same basis as graduates of approved medical schools in the United States The purpose of this list is to serve as a guide for individuals, particularly those who are considering medical study abroad, and for medical organizations and institutions in the United States In developing the list, the two Councils have been aided by the Committee on Foreign Medical Credentials This Committee, established to advise the Council, consists of representatives from 19 private and governmental agencies concerned with problems of medical education and licensure and the problems of foreign physicians

Table 23 shows the schools now included in the list of foreign medical schools In the past 18 months, 11 schools have been added to the original 38 schools listed in February, 1950, to bring the total to 49

TABLE 23 —*Foreign Medical Schools*

On the basis of information presently available, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the following foreign medical schools on the same basis that they consider graduates of approved medical schools in the United States This list is not final and will be supplemented as information is compiled for other schools

Belgium

Free University of Brussels Faculty of Medicine
(Université Libré de Bruxelles Faculté de Medicine)

Catholic University of Louvain Faculty of Medicine
(Université Catholique de Louvain Faculté de Medicine or
Katholieke Universiteit te Leuven)

University of Ghent Faculty of Medicine
(Universiteit te Gent Faculteit der Geneeskunde, or
Université de Gand Faculté de Médecine)

University of Liege Faculty of Medicine
(Université de Liége Faculté de Medicine)

Brazil

University of Sao Paulo Faculty of Medicine
(Universidade de Sao Paulo Faculdade de Medicina)

Denmark

University of Copenhagen Faculty of Medicine
(Kobenhavns Universitet Laegevidenskabelige Fakultet)

Finland

University of Helsinki Faculty of Medicine
(Helsingfors Universitet Medicinska Fakulteten)

Medical Faculty Turku University
(Turun Yliopiston Laaketieteellinen Tiedekunta)

Lebanon

American University of Beirut School of Medicine

Netherlands

University of Amsterdam Faculty of Medicine
(Universiteit van Amsterdam Geneeskunde Faculteit)

State University of Groningen Faculty of Medicine
(Rijks Universiteit te Groningen Medische Faculteit)

State University of Leiden Faculty of Medicine
(Rijks Universiteit te Leiden Faculteit der Geneeskunde)

State University of Utrecht Faculty of Medicine
(Rijks Universiteit te Utrecht Faculteit der Geneeskunde)

Norway

University of Oslo Faculty of Medicine
(Kongelige Frederiks Universitet Medisinske Fakultet)

Sweden

Royal Charles University Medical Faculty Lund
(Kungl Karolinska Universitetet Medicinska Fakulteten)

Charles Medico-Surgical Institute Stockholm
(Karolinska Mediko Kirurgiska Institutet)

Royal University of Uppsala Medical Faculty
(Kungl Universitetet i Uppsala Medicinska Fakulteten)

Switzerland

The recommendation with respect to the following medical schools in Switzerland applies only to those graduates of Swiss medical schools who hold the Swiss Federal Diploma issued by the Federal Department of the Interior (Eidgenoissisches Departement Des Innern Departement Federal de L interieur) and obtainable only by Swiss citizens or who hold the Certificate of Medical Studies (Akademische Zeugnis Certificat d Etudes Medicales) which is issued by the Departments of Education of the cantonal government and which is awarded to those not citizens of Switzerland who complete a course of study and pass examinations equivalent to those taken by Swiss citizens in qualifying for the Swiss Federal Diploma

The recommendation does not apply to those holding only the M D degree from Swiss universities or those who have taken only faculty examinations and hold certificates other than the Swiss Federal Diploma of its equivalents the Akademische Zeugnis or Certificat d Etudes Medicales The M D degree in Switzerland is frequently awarded on the basis of a thesis written during as little as one year in residence Faculty diplomas may be issued to students who have not completed the full course of study and who have not passed the examinations required for the Swiss Federal Diploma or its equivalent

Officials of State Boards and of other organizations who are in doubt as to the nature of credentials presented by individual graduates of Swiss schools are urged to communicate with the Director of the Schweizerisches Gesundheitsamt Bern Switzerland

University of Basel Faculty of Medicine
(Universität Basel Medizinische Fakultät)

University of Bern Faculty of Medicine
(Universität Bern Medizinische Fakultät)

University of Geneve Faculty of Medicine
(Université de Genève Faculté de Medecine)

University of Lausanne Faculty of Medicine
(Université de Lausanne Faculté de Medecine)

University of Zurich Faculty of Medicine
(Universität Zurich Medizinische Fakultät)

United Kingdom

The recommendation applies only to those physicians trained in the United Kingdom who hold medical degrees from the universities listed The recommendation does not apply to those physicians who received their medical training at these universities or their affiliated hospital medical schools but who did not complete the work for the degree and who obtained their qualifications only through the examinations of the licensing corporations of the United Kingdom

England

University of Birmingham Faculty of Medicine
University of Bristol Faculty of Medicine
University of Cambridge Faculty of Medicine
University of Durham Medical School Newcastle-upon Tyne
University of Leeds Faculty of Medicine
University of Liverpool Faculty of Medicine
University of London †
University of Manchester Faculty of Medicine
University of Oxford Faculty of Medicine
University of Sheffield Faculty of Medicine

Northern Ireland

Queen s University of Belfast Faculty of Medicine

Scotland

University of Aberdeen Faculty of Medicine
University of Edinburgh Faculty of Medicine
University of Glasgow Faculty of Medicine
University of St Andrews Medical School St Andrews and Dundee

Wales

Welsh National School of Medicine University of Wales, Cardiff

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† Work for the medical degree of the University of London is offered at the following hospital medical schools

Charing Cross Hospital Medical School
Guy s Hospital Medical School
King s College Hospital Medical School
London Hospital Medical School
Middlesex Hospital Medical School
Royal Free Hospital School of Medicine
St Bartholomew s Hospital Medical School
St George s Hospital Medical School
St Mary s Hospital Medical School
St Thomas Hospital Medical School
University College Hospital Medical School
Westminster Hospital Medical School

It has been repeatedly emphasized that this list is a tentative one, to which other schools will be added when sufficient data has been compiled to justify their inclusion Absence of a school from the list does not therefore necessarily imply disapproval Hence it is the responsibility of individual institutions and organizations to decide whether to accept graduates of schools not included in this list

The list of foreign medical schools is now accepted, as a guide by the licensing boards in 23 states

Postgraduate and Continuation Courses for Physicians

The Council on Medical Education and Hospitals publishes semiannually in THE JOURNAL lists of postgraduate and continuation courses for physicians The opportunities presented in these listings include a wide variety of fields in clinical medicine and in the basic sciences These courses vary in length from a few days to a year or longer Some are concentrated full-time courses, others are part-time In the June 9, 1951, issue of THE JOURNAL, more than 800 courses covering the period from July 1, 1951, to Jan 15, 1952, are listed The medical schools take a prominent part in presenting this type of training State and county medical societies, hospitals, state and city boards of health, and special societies are also active in providing leadership in developing this aspect of medical education

With the exception of the formal basic science courses, these courses are not designed to prepare physicians for specialty board certification Some opportunities, however, are offered for review work in preparation for examination in the specialties

This section is devoted to an analysis of the courses offered during the period July 1, 1950, to June 30, 1951 Mention is also made of some of the recent developments in postgraduate education The statistical summaries are divided into three groups short review courses of less than five days, courses of five days' duration or longer and, lastly, a group including clinical conferences, graduate assemblies, study courses, and circuit courses Comparable figures are also given for previous years

RECENT DEVELOPMENTS

Postgraduate refresher courses are offered at the University of Arkansas School of Medicine as a joint effort of the State Medical Society, the Arkansas Academy of General Practice and the medical school The general plans call for a refresher course in one department or another every two weeks except during the summer months

A series of postgraduate short courses for medical officers will be given at five Army hospitals, the Armed Forces Institute of Pathology and the Medical Service Graduate School, Washington, D C, during the last six months of this year Eighteen courses will be given during this period Courses will utilize lectures, conferences, round-table discussions, and clinics Naval and Air Force medical officers have been invited to attend these courses This program is in keeping with the Army Career Management Plan, which provides a continuance of professional education throughout the military career of all Medical Corps and Dental Corps officers of the Army Medical Service Priority will be given to medical officers on active duty in the allotment of spaces, while medical officers not on active duty and civilian physicians are eligible to attend if space is available

A basic science course for specialty training is offered by the postgraduate division of the University of Illinois College of Medicine The course extends over a nine-month period and is designed to review the preclinical sciences against the student's background of undergraduate medical education and internship and to supplement the clinical experience obtained in residency training programs

An experiment in postgraduate education is being undertaken by the Indiana State Medical Association Programs are distributed once a month by private telephone wire to the 92 county societies throughout the state The county society arranges for a private line to its meeting place and for a public address system Listeners are furnished with brochures containing short biographies of the speakers, an outline of each address, reproductions of suitable visual aids, and space for notes

Beth Israel Hospital, Boston, is planning an intensive one-week course in practical clinical electrocardiography The course is designed for practicing physicians and beginners in electrocardiography who desire a short but practical introduction to the use of electrocardiograms in general practice

A postgraduate course in the early detection of cancer is being offered by Wayne University College of Medicine, Detroit The course is scheduled so that it may be taken for three quarters or so that any one quarter may be elected The course is designed to acquaint physicians with the means of diagnosis which are readily available to them

A feature of the intern and resident education program at the Atlantic City Hospital, New Jersey, is the daily clinical conference, at which distinguished teacher-clinicians from leading medical centers discuss diagnostic problems from the hospital wards and present didactic lectures on subjects of particular interest All licensed physicians are invited to attend these conferences

Postgraduate training in orthopedic surgery is being offered by the Hospital for Joint Diseases, New York City The curriculum will include a series of lectures, case demonstrations, and conferences on the clinical, diagnostic, therapeutic, pathologic, bacteriologic, chemical, and radiologic aspects of skeletal disease so integrated as to present a general review of the modern concept of the more important orthopedic diseases

The Memorial Center for Cancer and Allied Diseases, New York City, is offering refresher courses to physician-anesthetists for periods of one to six months Special emphasis is laid on anesthesia for head and neck surgery and for thoracic and radical pelvic surgery

New York Hospital and Cornell University Medical College sponsors a weekly practitioners conference at which programs of special interest to the general practitioner are arranged It is planned to have the conference in the form of clinics at which patients in the New York Hospital will be presented to illustrate the subject under discussion Round-table technic will be employed Emphasis will be placed on thorough case study, common errors in diagnosis, interpretation, and therapy Emphasis will also be placed on the functional pathology and origin of common symptoms

The Division of Postgraduate Medical Education of the University of Washington School of Medicine, Seattle, has scheduled postgraduate courses in hematology, clinical electrocardiography, psychiatry, and neurology in affiliation with the Washington State Medical Association and the State Department of Health

ANALYSIS OF COURSES OFFERED, 1950-1951

Courses of Less Than Five Days' Duration —Twenty-seven states and the District of Columbia provided courses of less than five days' duration for physicians desiring to continue professional study in or near their home communities There were 420 courses offered

TABLE 24 —*Short Review Courses of Less Than Five Days Duration 1950 1951*

State Where Given	No of Courses	State Where Given	No of Courses
Alabama	[illegible]	Minnesota	18
California	20	Missouri	4
Colorado	9	Nebraska	2
Connecticut	1	New Jersey	7
District of Columbia	2	New York	179
Florida	4	Ohio	7
Georgia	1	Oklahoma	5
Illinois	20	Oregon	1
Indiana	5	Pennsylvania	4
Iowa	10	Tennessee	1
Kansas	16	Texas	15
Kentucky	4	Virginia	1
Massachusetts	11	Washington	[illegible]
Michigan	43	Wisconsin	2
Total			420

TABLE 25 —*Short Review Courses of Less Than Five Days Duration 1950 1951*

Subject	No of Courses Given	Attendance
Allergy	12	139
Anatomy	2	14
Arthritis	4	439
Anesthesiology	[illegible]	902
Bacteriology	1	6
Basic Science	1	1
Biochemistry	8	81
Cardiovascular Disease	9	604
Dermatology and Syphilology	13	108
Diabetes	2	97
Electrocardiography	15	576
Endocrinology	14	65
Endoscopy	8	33
Fractures	1	124
Gastroenterology	10	93
Geriatrics	1	40
Hematology	12	111
Histology	1	2
Industrial Medicine	1	1
Internal Medicine	18	39
Malignant Disease	[illegible]	15
Medicine—General	43	1 088
Neurology and Psychiatry	70	917
Nuclear Science	4	68
Obstetrics and Gynecology	35	678
Ophthalmology and Otolaryngology	22	259
Orthopedic Surgery	9	25
Pathology	7	28
Pediatrics	16	250
Physical Medicine	13	5
Physiology	2	31
Plastic Surgery	1	2
Poliomyelitis	[illegible]	61
Proctology	1	14
Public Health	1	41
Pulmonary Diseases	9	282
Radiology	14	279
Surgery	15	597
Therapy	4	62
Urology	6	37
Pharmacology	1	15
Tropical Medicine	1	12
Civilian Defense	1	24
	420	7 438

Table 24 lists these states and the number of courses given in each state *Forty-four subjects were covered* Table 25 lists the subjects and also shows the attendance recorded The attendance numbered 7,438 More than 500 attended courses offered during the year in cardiovascular diseases, electrocardiography, general medicine, neurology and psychiatry, obstetrics and gynecology, and surgery The greatest number were enrolled for courses in general medicine

The courses varied in length from sessions of one hour or a series of five or more lectures to four and one-half days' full time and consisted of organized courses, clinics utilizing hospital patients, lectures and demonstrations Of the 420 courses reported, 54 were four-day courses, 96 were three-day courses, 66 were two-day courses, and 47 were given in one full day The remainder of the courses were reported by lectures, sessions, or hours The instructors were chosen from physicians practicing in the state in which the courses were offered as well as from out of state Medical school faculties participated in 296 courses The facilities used for conducting these courses, in addition to medical schools, included hospitals, clinics, and hotels and also combinations of these facilities

These offerings were held every month, the majority being given in January, February, March, April, September, and October In 13 instances they were arranged at the convenience of the applicant Six courses are

TABLE 26 —*Postgraduate Courses of Five Days or Longer, 1950 1951*

State Where Given	No of Courses	State Where Given	No of Courses
Arkansas	2	Minnesota	7
California	21	Missouri	3
Connecticut	8	New Jersey	20
Colorado	3	New York	474
District of Columbia	9	North Carolina	5
Georgia	42	Ohio	4
Illinois	238	Oregon	[illegible]
Kansas	[illegible]	Pennsylvania	52
Louisiana	22	Texas	4
Massachusetts	100	Washington	3
Michigan	38		
Total			1 0[illegible]

TABLE 27 —*Postgraduate Courses of Five Days or Longer 1950 1951*

Subject	No of Courses Given	Attendance
Allergy	13	216
Anatomy	42	440
Arthritis	1	23
Anesthesiology	27	804
Bacteriology	6	102
Basic Science	13	83
Biochemistry	3	218
Cardiovascular Disease	42	[illegible]
Dermatology and Syphilology	22	145
Diabetes	6	44
Electrocardiography	34	801
Electroencephalography	3	2
Endocrinology	12	284
Endoscopy	35	128
Forensic Medicine	3	4
Fractures	9	61
Gastroenterology	40	307
Geriatrics	[illegible]	2
Hematology	19	104
Histology	2	4
Industrial Medicine	6	89
Internal Medicine	42	1 073
Malignant Disease	12	101
Medicine—General	49	1 750
Neurology and Psychiatry	53	1 475
Nuclear Science	1	143
Nutrition	4	2
Obstetrics and Gynecology	[illegible]	859
Ophthalmology and Otolaryngology	112	834
Orthopedic Surgery	22	45
Pathology	41	372
Pediatrics	54	679
Physical Medicine	17	67
Physiology	13	210
Plastic Surgery	1	68
Poliomyelitis	8	902
Proctology	16	139
Public Health	32	139
Pulmonary Diseases	[illegible]	[illegible]
Radiology	44	40[illegible]
Surgery	101	871
Therapy	2	40
Urology	14	110
Venereal Disease	2	64
Tropical Medicine	1	0
Totals	1 0[illegible]	11,8[illegible]

offered continuously Twenty were available for specialists only Fees ranged from $5 to $250 The majority of the fees were less than $50 In 14 instances no fee was charged

While the number of courses in this category increased from 161 in 1949-1950 to 420 in 1950-1951, the attendance did not increase correspondingly The attendance reported was more than 2,000 below that of the previous year

Courses of Five Days' Duration or Longer—In centers where ample clinical facilities are available, 1,067 graduate courses of more than five days' duration were offered in 20 states and the District of Columbia during 1950-1951 These states and the number of courses which were given in each state are listed in Table 26 There were 1,067 such courses, the greatest number were offered in Illinois and New York

These courses consisted of refresher courses of five or more days to intensive courses extending over one year Courses in 45 subjects were given Table 27 lists the subjects covered, the number of courses in each subject, and the total attendance for the courses in each subject In this type of training the total attendance was 14,890 More than 1,000 physicians attended courses in internal medicine, general medicine, and neurology and psychiatry, and over 500 were enrolled for courses in cardiovascular disease, electrocardiography, obstetrics and gynecology, ophthalmology and otolaryngology, pediatrics, pulmonary diseases, and surgery

The length of these courses varied from five days to one month for 523 courses There were 429 courses offered ranging in length from one to four months and 90 from five to 12 months There were four for three years, while the length of the course in 21 instances was arranged

Instruction was both didactic and clinical for 725 courses, didactic only for 112, and clinical only for 29 The remainder did not specify the type of instruction

Medical school facilities were used for 719 courses, hospitals for 181, and clinics for 30 In many instances, two or all three of these sources were used in presenting an individual course Hotel and other facilities were used for 23 courses The balance did not specify the facilities used.

The faculties of medical schools served as instructors in 733 courses Additional instructors were specialists in their field, chosen mainly from physicians residing within the state in which the course was given but including as well physicians from outside the state

Courses were offered during every month last year, and in 138 instances they were arranged to suit the convenience of physician-students In 17 instances the courses were given continuously There were 129 courses offered to specialists only Fees ranged from $10 to $1,200 For six courses no fee was charged

The reported attendance for the 1,067 courses given during 1950-1951 was 23,454 There were 79 courses reported cancelled By comparison with the previous year, the number of courses given decreased by 13 and the attendance by 633

One hundred and thirty-five agencies participated in the sponsoring of these courses, including 59 medical schools, 17 special societies, 8 state medical societies, 12 hospitals, 3 health departments, 4 county medical societies, 4 graduate schools of medicine, and the government agencies

Clinical Conferences, Graduate Assemblies, Study and Circuit Courses—In 21 states and the District of Columbia, 79 clinical conferences, graduate assemblies, and study and circuit courses were held during 1950-1951 This type of training varied in length from one-day sessions to two weeks for conferences, assemblies, and study courses In six states, circuit courses were held at various times throughout the states in four to 20 centers Contributing agencies were speakers' bureaus, medical schools, state and county medical societies, state health departments, and special societies Twenty-two subjects were covered The majority surveyed topics in general medicine and surgery Other subjects covered were cardiovascular disease, diabetes, corticotrophin (ACTH) and cortisone, obstetrics and gynecology, ophthalmology, and pediatrics Instruction was both didactic and clinical The facilities of hospitals, clinics, and medical schools were used Instructors included medical school faculties and physicians practicing in the state in which the training was given as well as from out of the state Courses were given in every month except May and August The fees ranged from $3 to $75 In 11 instances no fee was charged The attendance numbered 23,855

Summary—Some form of continuation study was provided during 1950-1951 in 30 states and the District of Columbia Table 28 summarizes for the three cate-

TABLE 28 —*Postgraduate Courses Offered and Attendance, 1945 1951*

	Less Than Five Days Duration			Five or More Days			Clinical Conferences Graduate Assemblies Study and Circuit Courses			Total		
	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance
1945-1946	154	128	4 140	1 070	1 043	19 991	52	52	21,824	1,276	1,223	45,955
1946-1947	239	205	10,274	1,201	1 137	23 062	21	21	20 475	1,551	1,363	59,811
1947 1948	496	478	31,509	1,270	1 183	24,878	25	25	20,356	1,800	1,686	82,803
1948-1949	304	262	16,921	1 074	981	28 507	67	67	38,058	1 445	1,313	83,380
1949-1950	161	161	10,523	1 080	1,080	24 087	129	129	40 708	1,870	1,370	75,318
1950-1951	420	420	7 438	1 067	1 047	23 454	79	74	23,855	1,566	1,541	54 747
Totals	1 774	1,654	80 705	6,801	6 474	143,979	373	368	171,270	9 008	8 496	402,020

gories of courses, the number of courses given, the number for which attendance was reported and the total attendance together with comparable figures for the five previous years The total attendance for all three groups last year was 54,747 This represents a marked decrease in attendance as compared with the previous four years A number of factors may be responsible for this decrease The increased number of physicians entering military service during the past year undoubtedly removed a large group of potential students from among practicing physicians Further, it is likely that in many communities the responsibilities of those physicians remaining were so increased as to make it difficult for them to leave their practices for extended periods of study It is also probable that the drop in attendance reflects the fact that much of the demand for refresher courses by medical officers who served during World War II has been met Question should also be raised as to whether courses are being planned in a manner designed to arouse the interest and satisfy the needs of the physician Further study will be needed to determine the answer to this question and the trend of postgraduate education in the years ahead

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama.—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944 In 1945 assumed title to Jefferson Hospital and Hillman Hospital Birmingham The Medical College of Alabama cares for all indigent patients of the county and city maintenance of which is paid to the university on a per diem basis by the county In 1943 the appropriation included $1 000 000 for the building of a new medical school which is now under construction and temporary quarters are now in the Jefferson-Hillman Hospital After completion of the new building which will house the basic sciences the current enrollment of 56 in the freshman class will be increased to 80 beginning in the fall of 1951 First instruction in the Medical College of Alabama started June 4 1945 with a junior class and this class was graduated in October 1946 On October 8 1945 the School of the Basic Medical Sciences on the University Campus established in 1920 and its faculty were absorbed into the new Medical College of Alabama. The medical college is coeducational. Minimum entrance requirements are three years of college work. Tuition is as follows for legal residents of Alabama $400 per academic year plus incidental fees of $30 Nonresidents of the state are charged an additional $250 each session The registration for the 1950-1951 session was 207 graduates 52 The last session began for the first and second years on Sept. 15 1950 and for the third and fourth years on Sept. 8 1950 The session ended for all four classes on June 2 1951 The next session for the first and second year classes will start Sept. 21 1951 and for the third and fourth year classes the session will begin Sept. 10 1951 All classes will end May 31 1952 The Dean is James J Durrett, M.D

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University Present title in 1899 In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880 Clinical teaching was suspended in 1918 but resumed in 1923 Coeducational since organization The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work The B S. degree is conferred at the end of the second year The fees for the four years for residents of Arkansas are $380 a year enrollment is restricted to residents of Arkansas The registration for the 1950-1951 session was 340 graduates 82 The last session began Sept 25 1950 and ended June 11 1951 The next session will begin Sept. 24 1951 and will end June 16 1952 The Dean is Hayden C Nicholson M D

CALIFORNIA

Loma Linda Los Angeles

College of Medical Evangelists, Loma Linda Boyle and Michigan Avenues Los Angeles 33—Organized in 1909 The first class graduated in 1914 The laboratory departments are at Loma Linda the clinical departments at Los Angeles Coeducational since organization Three years of collegiate work are required for admission The freshman sophomore and junior years consist of nine month academic sessions and the senior year will have in addition to the nine month session a seven weeks clinical clerkship during the summer between the junior and senior years. A twelve month internship in an approved hospital is required The yearly tuitions including fees are respectively $1 287 00 $1,275 50 $1 291 25 $1,298 75 The registration for 1950-1951 was 374 graduates 81 The last session for freshman and sophomore students began on Sept 3 1950 and ended June 8 1951 respectively The junior session began on Sept 10 1950 and ended June 8 1951 The senior session began June 11 1950 and was completed June 8 1951 The next session for freshman and sophomore students will begin Sept. 2 1951 junior students Sept 8 1951 and senior students began June 10 1951 and will end June 6 1952 for the first three classes and June 7 1952 for seniors The President is Walter E. Macpherson M D Los Angeles The Dean is Harold Shryock M.D., Loma Linda and the Associate Dean is Varner J Johns M D Los Angeles

Los Angeles

University of Southern California School of Medicine 3518 University Avenue Zone 7—Organized in 1895 as the University of Southern California College of Medicine First class graduated in 1899 In 1908 it became the Los Angeles Medical Department of the University of California In 1909 the College of Physicians and Surgeons established in 1904 became the Medical Department of the University of Southern California Its activities were suspended in 1920 reorganized in May 1928 under present title Entrance requirements are three years of college work An internship is required for graduation Coeducational since organization. Annual fees amount to approximately $750 The registration for 1950-1951 was 272 graduates 67 The last session began Sept 18 1950 and ended June 16 1951 The next session will begin Sept. 17 1951 and will end June 14 1952 The Dean is Burrell O Raulston M D

San Francisco

University of California School of Medicine, Medical Center San Francisco 22.—Organized in 1864 as the Toland Medical College The first class graduated in 1864 In 1873 it became the Medical Department of the University of California In 1909 by legislative enactment the College of Medicine of the University of Southern California at Los Angeles became a clinical department but was changed to a graduate school in 1914 In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided Coeducational since organization Three years of collegiate work are required for admission The work of the first year is given at Berkeley and that of the last three years at San Francisco The medical course consists of four academic years each containing two semesters of sixteen weeks each The fees are $320 per academic year Nonresidents are charged $250 additional each year The registration for the 1950-1951 session was 287 graduates 71 The last session began Sept 11 1950 and ended June 14 1951 The next class will begin Sept. 17 1951 and will end June 19 1952 The Dean is Francis Scott Smyth M D

Stanford University San Francisco

Stanford University School of Medicine University Campus Stanford University 2398 Sacramento Street San Francisco—The main buildings are in San Francisco The laboratories of anatomy bacteriology and experimental pathology chemistry and physiology are located on the campus at Stanford University which is thirty miles southeast of San Francisco adjoining the city of Palo Alto The post office is Stanford University Organized in 1908 when by agreement the interests of Cooper Medical College were taken over The first class graduated in 1913 Coeducational since organization Three years of collegiate work are required for admission The quarter plan is in operation An internship is a requirement for graduation The average fee for each of the four years is $780 The registration for 1950-1951 was 241 graduates 58 The last session for all classes began Sept 25 1950 and ended June 13 1951 The next session will begin Sept 24 1951 and will end June 11 1952 The Dean is Loren R. Chandler M D

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883 Classes were graduated in 1885 and in all subsequent years except 1898 and 1899 Denver and Gross College of Medicine were merged Jan. 1 1911 Coeducational since organization The entrance requirements are three years of collegiate work. The fees average $525 per academic year Nonresidents are charged $2 130 additional each year The registration for 1950-1951 was 301 graduates 69 The last session began Sept 25 1950 and ended June 9 1951 The next session will begin Sept 24 1951 and will end June 9 1952 The Dean is Robert C Lewis Ph D

CONNECTICUT

New Haven

Yale University School of Medicine 333 Cedar Street—Chartered in 1810 as the Medical Institution of Yale College Organized in 1812 instruction began in 1813 first class graduated in 1814 A new charter in 1879 changed the name to the Medical Department of Yale College In 1884 the Connecticut Medical Society surrendered such authority as had been granted by the first charter In 1887 Yale College became Yale University Coeducational since 1916 The requirements for admission are three years collegiate work. The fees average $778 per academic year The registration for 1950-1951 was 262 graduates 58 The last session began Sept. 20 1950 and ended June 2 1951 The next session will commence Sept 19 1951 and will end May 31 1952 The Dean is C N Hugh Long M D

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road *N W Zone 7—Organized in* 1851 First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of nonveterans but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average $867 00 per academic year Registration for 1950-1951 was 428 graduates 103 The last *session for* freshmen started Sept 18 1950 and ended May 26 1951 the sophomore class started Sept 18 1950 and ended *May 26 1951* the junior class started Aug 28 1950 and ended May 18 1951 and the senior class started on May 29 1950 and ended on May 26 1951 The date of graduation was June 11 1951 The next session for freshmen and sophomores will begin Sept. 17 1951 and end May 24 1952 the juniors will be in session from Aug 27 1951 to May 16 1952 the senior session began May 28 1951 and will end May 24 1952 The date of *graduation will* be June 9 1952. The Dean is Rev Paul A McNally S.J Ph D

George Washington University School of Medicine, 1335 H Street N W—Organized in 1825 as the Medical Department of Columbian College Also authorized to use the name National Medical College Classes were graduated in 1826 and in all subsequent *years except in* 1834-1838 and 1861 1863 *inclusive* The original title was changed to Medical Department of Columbian University in 1873 In 1903 it absorbed the National University Medical Department In 1904 by an Act of Congress the title of George Washington University was granted to the institution Coeducational since 1884 Three years of college work is required for admission The fees average $750 for academic year Registration for 1950-1951 was 338 graduates 72 The last session began Sept. 18 1950 and ended May 30 1951 The next session will begin Sept 17 1951 and will end on May 28 1952 The Dean is Walter A Bloedorn M D

Howard University College of Medicine, 520 W Street N W Washington 1 D C—Chartered in 1867 Organized in 1869 The first class was graduated in 1871 Coeducational since organization Negro students compose a majority of those in attendance The minimum requirements are four years of collegiate work but practically the *bachelor s degree* The course covers four years of thirty three weeks each The fees are respectively $489 $484 $474 $487 The registration for 1950-1951 was 288 graduates 66 The last session began Sept 29 1950 and ended June 8 1951 The next session will begin Sept 27 1951 and will end June 6 1952 The Dean is Joseph L Johnson M D

GEORGIA

Atlanta

Emory University School of Medicine.—Organized in 1854 as the Atlanta Medical College *Classes* graduated *1855 to 1861 when it suspended* Reorganized in 1865 A class graduated in 1865 and each subsequent year except 1874 *In 1898 it merged with the Southern Medical College* (organized in 1878) taking the name of Atlanta College of Physicians and Surgeons In 1913 it merged with Atlanta School of Medicine (organized in 1905) reassuming the name of Atlanta Medical College Became the School of Medicine of Emory University in 1915 Three years of collegiate work are required for admission The course of study is four academic years 36 weeks each in the first and second years, 40 weeks each in the third and fourth years The fees for each of the four academic years are $800 The registration for 1950-1951 was 281 graduates 66 The last session for freshmen and sophomores began Aug 31 and Sept 5 1950 and ended June 2 1951 The last session for juniors and seniors began August 1 1950 and ended June 2 1951 The next session for freshmen and sophomores will begin Aug 30 and Sept. 4 1951 and will end June 7 1952 The next session for junior and senior classes will begin Aug 1 1951 and end on June 7 1952 The Dean is Hugh Wood M D

Augusta

Medical College of Georgia, University *Place—Organized in 1828* as the Medical Academy of Georgia the name being changed to the Medical College of Georgia in 1829 After 1873 it was known as the Medical Department of the University of Georgia On July 1 1933 the name was changed to the University of Georgia School of Medicine On January 18 1950 it became the Medical College of Georgia Property transferred to the University in 1911 Classes were graduated in 1833 and all subsequent years except 1862 and 1863 Coeducation was begun in 1920 Three years of college work are required for admission Fees for 1951 1952 $390 00 per academic year for residents of Georgia nonresidents, $690 00 Only bona fide residents of Georgia admitted (with exception of A S T and V-12 Program students during World War II) The registration for the 1950-1951 session was 308 graduates 74 The next session will begin Sept 13 1951 and will end June 2 1952 The President is G Lombard Kelly, M D

ILLINOIS

Chicago

Chicago Medical School, 710 South Wolcott Ave—Founded in 1912 as the *Chicago* Hospital *College of* Medicine In 1919 the name of the institution was changed to The Chicago Medical School The school *moved from* its former location to its present site in the Medical Center in 1930 The Chicago Medical *School is* a nonsectarian coeducational institution It is *chartered* in the State of Illinois as a nonprofit institution A collegiate degree is required *for admission* A hospital internship is a requirement for *graduation The yearly* tuition and fees are, respectively $664 $872 $837 $649 The registration for 1950-1951 was 273 *graduates 58* The last session for freshmen began Oct. 2 1950 and for sophomores July 3 1950 and ended June 16 1951 the *junior* and senior session began Oct 2, 1950 and ended for seniors June 23 1951 The *junior* class will end Sept. 22 1951 The next session for freshmen juniors and seniors will begin Oct. 1 1951 and will end June 14 1952, September 21 1952 and June 21 1952, respectively The sophomore class began July 2 1951 and will end June 14 1952. The *President is John J* Sheinin M D The Dean of Faculty is F J Mullin Ph D and the Dean of Students is A. H Ryan *M D*

Northwestern University Medical School 303 *East Chicago Avenue*—Organized in 1859 as the Medical Department of Lind University First class graduated in 1860 *In 1864* it became independent as the Chicago Medical College It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891 *when the* present title was taken. Became an integral part of Northwestern University in 1905 Coeducational since 1926 The *requirement for admission* is three years of collegiate work. The B S *in medicine degree may be* conferred before the end of the senior year *The total fees* are $830 each year The registration for 1950-1951 was 524 graduates 279 The last session began *Sept 22 1950* and ended June 11 1951 The *next* session will begin Oct 3 1951 and will end June 16 1952 The Dean is Richard H Young M D

Stritch School of Medicine of Loyola University, *706 South* Wolcott *Avenue.—Organized* in 1915 by acquisition of Bennett Medical College which had been organized in 1869 *Facilities* enlarged by the acquisition of *Chicago* College of Medicine and Surgery Faculties in basic sciences put on full time basis and assumed name of Loyola University School of Medicine in 1917 Operated as an organic part of Loyola University Name officially changed to Stritch School of Medicine of Loyola University on April 15 1948 Coeducational since organization Three years of collegiate work is required for admission The fees are $675 a year The registration for 1950-1951 was 343 graduates 79 The last session for *freshmen* sophomores and juniors began Sept. 25 1950 and ended June 23 1951 the session for seniors began Sept. 25 1950 and ended June 9 1951 The next session will begin Sept. 24 1951 and will end June 21 1952 for the first three classes and June 7 1952 for seniors The Acting Dean is John F *Sheehan M D*

University of Chicago The School of Medicine, Fifty Eighth Street and Ellis Avenue—Organied in 1924 as a part of the Ogden Graduate School of Science of the University of Chicago In 1932, when the University of *Chicago* reorganized its departments the medical departments were included in the Division of Biological Sciences The work of the first two years in the medical courses has been given on the University Quadrangles since 1899, but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine All undergraduate instruction is now *given only on* the campus of the University of Chicago *A special function* of the school is to train people for making contributions to the advancement of medical science The requirements for admission are three *years of collegiate work.* The curriculum covers twelve quarters of work. The tuition fee averages $800 The registration for 1950-1951 was 277 graduates 57 Quarters begin in March June September and December of each year The Dean of the Division of the Biological Sciences is Lowell T Coggeshall M D All correspondence pertaining to student affairs including admission to Joseph J Ceithaml Ph D Dean of Students

University of Illinois College of Medicine, 1853 West Polk Street Zone 12—Organized in 1882 as the College of Physicians and Surgeons The first class graduated in 1883 It became the Medical Department of the University of Illinois by affiliation in 1897 Relationship with the university was canceled in June 1912, and was restored in March 1913 when the present title was assumed The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital Chicago became a teaching unit of the university Coeducational since *1898 Three years of collegiate work* are required for admission The B S in medicine degree may be conferred at the end of the second year The fees for residents of Illinois average $292 per academic year nonresidents pay an additional fee of $300 The registration for the *1950-1951 session* was 665 graduates 163 The last *session* began Sept 25 1950 and ended June 23 1951 The next session will begin Oct 1 1951 and will end June 28 1952 The Dean is Stanley W Olson M D

INDIANA

Bloomington Indianapolis

Indiana University School of Medicine, Bloomington 1040 West Michigan Street Indianapolis—Organized in 1903 but did not give all the work of the first two years of the medical course until *1905* In 1907 by union with the State College of Physicians and *Surgeons* the complete course in *medicine* was *offered In 1908* the Indiana Medical College which was formed in *1905 by the merger* of the Medical College of *Indiana (organized* in 1878) the Central College of Physicians and Surgeons (organized in 1879) and the Fort Wayne College of Medicine *(organized* in 1879) merged into it The first class was graduated in 1908 Coedu cational since organization. The B S degree in anatomy and physiology is conferred Three years of college work are required for admission The work of the first two semesters is given at Bloomington the remainder of the work at Indianapolis. Regular fee for two semesters of work is $221 for residents of Indiana and $426 for nonresidents The registration for the 1950-1951 session was 542 graduates 106 The last session began Sept 25 1950 and ended June 18 1951 The next session will begin Sept 17 1951 and will end June 16 1952. The Dean is John D Van Nuys M D Indianapolis

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869 First session began in 1870 First class graduated in 1871 Absorbed Drake University College of Medicine in 1913 Coeducational since 1870 Three years of collegiate work are required for admission. The B A degree in the combined course of liberal arts and medicine is conferred The tuition fee is $256 each year for residents of Iowa and $566 for nonresidents The registration for 1950-1951 was 395 graduates 86 The last session began Sept. 21 1950 and ended June 8 1951 The next session will begin Sept. 21 1951 and will end on June 6 1952. The Chairman of the Executive Committee is Willis M Fowler M D

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; 39th and Rainbow Boulevard Kansas City —Organized in 1880 It offered only the first two years of the medical course until 1905 when it merged with the Kansas City (Mo) Medical College founded in 1869 the College of Physicians and Surgeons founded in 1894 and the Medicochirurgical College founded in 1897 Absorbed Kansas Medical College of Topeka in 1913 The first class graduated in 1906 At present the first year (two semesters and one summer session) is given on the University campus at Lawrence while the remaining three years is given at the Medical Center in Kansas City Kansas. Coeducational since 1880 The requirement for admission is three years of collegiate work four years preferred The fees are $475 per year the nonresident fees are $925 per year The registration for 1950-1951 was 363 graduates 84 The last session began June 12 1950 and ended May 26 1951 The 1951 freshman class began June 11 1951 (60) and September 17 1951 (60) The sophomore class of 1951 was on a staggered basis. The junior and senior classes began June 5 1951 and will end May 24 1952 Three fourths of each junior and senior class is in school each quarter of the school year while one fourth is on vacation (juniors) or preceptorship (seniors) The Acting Dean is Edward H Hashinger M D Kansas City

KENTUCKY

Louisville

University of Louisville School of Medicine 101 West Chestnut Street Zone 2 —Organized in 1837 as Louisville Medical Institute The first class graduated in 1838 and a class graduated each subsequent year except 1863 In 1846 the name was changed to University of Louisville Medical Department In 1907 it absorbed the Kentucky University Medical Department in 1908 the Louisville Medical College the Hospital College of Medicine and the Kentucky School of Medicine In 1922 it changed its name to the University of Louisville School of Medicine Coeducational since organization became non-segregational in 1951 Three years of collegiate work are the minimum requirements for admission Tuition is $578 for residents of Louisville and Jefferson County and $678 for nonresidents per school year except in the case of new students for whom the tuition is $800 for all residents of Kentucky and $1 200 for out-of-state students. These figures include special fees excepting graduation fee of $10 The registration for 1950-1951 was 372 excluding unclassified and special students graduates 93 The school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester The last session began Sept 12 1950 and ended June 2 1951 The next session begins on Sept 10 1951 and will end on May 31 1952 The Dean is J Murray Kinsman M D

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue Zone 12.—Organized January 1931 as Louisiana State University Medical Center Present title in 1939 Coeducational First session began in October 1931 with students of first and third years. Course covers four sessions of not less than 36 weeks each A minimum of three years collegiate work is required for admission Total fees $120 each year for residents of Louisiana additional tuition of $400 each year for nonresidents. The registration for 1950-1951 was 427 graduates 97 The last session began Sept 5 1950 and ended June 2 1951 The next session will begin Sept. 4 1951 and end June 2 1952 The Dean is William W Frye M D

Tulane University of Louisiana School of Medicine 1430 Tulane Avenue —Organized in 1834 as the Medical College of Louisiana Classes were graduated in 1835 and in all subsequent years except 1863 1865 inclusive It became the Medical Department of the Tulane University of Louisiana in 1884 Present title in 1913 Coeducational since 1915 A minimum of three years of collegiate work is required for admission. Total fees average $800 per academic year The registration for the 1950-1951 session was 519 graduates 131 The last session began on Sept 19 1950 and ended on June 5 1951 The next session will begin Sept. 17 1951 and will end May 27 1952 The Dean is Maxwell E. Lapham M D

MARYLAND

Baltimore

Johns Hopkins University School of Medicine 710 North Washington Street.—The nucleus of a medical faculty was constituted in 1883 Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893 The first class graduated in 1897 Coeducational since organization The requirement for admission is a college degree. The course extends over four years of eight and one-half months each The fees averaged $829 per academic year The registration for 1950-1951 was 304 graduates 76 The last session began on Oct. 2, 1950 and ended June 12, 1951 The next session will begin Oct 1 1951 and will end June 10 1952. The Dean is Alan M Chesney M D

University of Maryland School of Medicine and College of Physicians and Surgeons, 522 W Lombard Street, Zone 1 —Organized in 1807 as the College of Medicine of Maryland The first class graduated in 1810 In 1812 it became the University of Maryland School of Medicine Baltimore Medical College was merged with it in 1913 In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed Coeducational since 1918 Three years of college work are required for admission The tuition fees average $516 for residents of the state for nonresidents $250 additional The registration for 1950-1951 was 386 graduates 96 The last session began Sept 21 1950 and ended June 9 1951 The next session will begin Sept 20 1951 and will end June 7 1952 The Dean is H Boyd Wylie M D

MASSACHUSETTS

Boston

Boston University School of Medicine 80 East Concord Street, Zone 18 —Organized in 1873 as a homeopathic institution In 1874 the New England Female Medical College founded in 1848 was merged into it The first class was graduated in 1874 Became non-sectarian in 1918 Coeducational since organization Applicants are required to present a minimum of three years of premedical work Total fees average $831 per year The registration for 1950-1951 was 270 graduates 59 The last session for freshmen sophomores and juniors began Sept. 11 1950 and ended May 26 1951 The last senior class began June 12 1950 and ended June 4 1951 The present senior class began June 11 1951 and will end June 2, 1952. All other classes will be enrolled Sept 10 1951 and the session will end May 24 1952 The Dean is James M Faulkner M D

Harvard Medical School 25 Shattuck Street Zone 15 —Organized in 1782. The first class graduated in 1788 Three years of collegiate work is required for admission The fees average $830 The registration for 1950-1951 was 509 graduates 145 The last session began Sept 25 1950 and ended on June 21 1951 The next session for freshmen sophomores and juniors will begin Sept 24 1951 and will end June 19 1952 The senior class began on June 4 1951 and will end June 19 1952 The Dean is George Packer Berry M D

Tufts College Medical School, 136 Harrison Avenue Zone 11 —Organized in 1893 as the Medical Department of Tufts College The first class graduated in 1894 Coeducational since 1894 A bachelor s degree is required for admission Enrollment is generally limited to residents of the New England States. The course covers four years. Total fees for each of the four years are, respectively $811 $806 $806 $816. The registration for 1950-1951 was 407 graduates 95 The last session for freshmen sophomores and juniors began Sept. 20 1950 for seniors June 12 1950 and all classes ended June 10 1951 The present session began for the seniors on June 11 1951 and for the other classes will begin Sept 19 1951 and will end June 8 1952 The Dean is Dwight O Hara M D

MICHIGAN

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery The first class graduated in 1851 Present title assumed 1915 Coeducational since 1870 The entrance requirements are three years of collegiate work The fees average $290 per academic year nonresidents $550 a year The registration for 1950-1951 was 544 graduates 113 The last session began Sept. 25 1950 and ended June 16 1951 The next session will begin Sept. 24 1951 and will end June 14 1952 The Dean is A C Furstenberg M D

Detroit

Wayne University College of Medicine 1512 St Antoine Street Zone 26.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879) Reorganized with the title of Detroit College of Medicine and Surgery in 1913 The first class graduated in 1869 In 1918 it became a municipal institution under the control of the Detroit Board of Education In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine as a part of the program of consolidation of the Detroit city colleges into a university system Coeducational since 1917 Entrance requirement is three years in an accredited college or university Until further notice enrollment is limited to residents of the State of Michigan The fees average $525 for the school year The registration for 1950-1951 was 258 graduates 62. The last session began Sept 11 1950 and ended June 9 1951 The next session will begin Sept 10 1951 and will end June 7 1952 The Dean is Gordon H Scott Ph D

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 14—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College The first class graduated in 1889 In 1908 the Minneapolis College of Physicians and Surgeons organized in 1883 was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913 Coeducational since organization The entrance requirements are three years of university work Students are required to meet the requirements for a degree of B S or B.A before receiving the degree of Bachelor of Medicine (M.B) which is granted at the end of the course The M D degree is conferred after a year of intern work, of advanced laboratory work or of public health work has been completed Total fees are $326 73 per academic year for residents and $659 23 for nonresidents The registration for 1950-1951 was 479 graduates 113 The last session began Oct. 2 1950 and ended July 28 1951 The next session will begin Oct 1 1951 and will end July 26 1952. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quarter of approximately 16 weeks in the senior year the spring quarter is 11 weeks in length and graduation is in June The Dean of Medical Sciences is Harold S. Diehl M.D

MISSOURI

St. Louis

St. Louis University School of Medicine, 1402 South Grand Boulevard Zone 4—Organized in 1901 as the Marion-Sims Beaumont Medical College by union of Marion-Sims Medical College organized in 1890 and Beaumont Hospital Medical College organized in 1886 First class graduated in 1902 It became the Medical School of St. Louis University in 1903 Completion of 3 years of college study is minimum admission requirement, but students presenting meritorious credits in excess of minimum are accepted by preference The fees average $814 per year The registration for 1950-1951 was 475 graduates 110 The last session began Sept 19 1950 and ended June 1 1951 The next session will begin Sept 18 1951 and will end June 1 1952 The Dean is Melvin A Casberg M D

Washington University School of Medicine, Kingshighway and Euclid Avenue Zone 10—Organized in 1842 as the Medical Department of St Louis University The first class graduated in 1843 In 1855 it was chartered as an independent institution under the name of St. Louis Medical College In 1891 it became the Medical Department of Washington University In 1899 it absorbed the Missouri Medical College Coeducational since 1918 Three years of college work is required for admission The fees average $800 The registration for 1950-1951 was 377, graduates 100 The last session began on Sept. 11 1950 and ended June 2 1951 The next session will begin on Sept 17 1951 and will end on June 11 1952 The Dean is Robert A Moore M.D

NEBRASKA

Omaha

Creighton University School of Medicine, 302 North Fourteenth Street, Zone 2—Organized in 1892 as the John A Creighton Medical College The first class graduated in 1893 Present title 1921 Coeducational since organization. Three years of collegiate work is required for admission The tuition fees average $800 per academic year The registration for 1950-1951 was 293 graduates 74 The last session began Sept. 22 1950 and ended May 31 1951 The next session will begin Sept 18 1951 and will end June 5 1952. The Dean is F G Gillick M D

University of Nebraska College of Medicine Forty-Second Street and Dewey Avenue Zone 5—Organized in 1881 as the Omaha Medical College The first class graduated in 1882. It became the Medical Department of Omaha University in 1891 The University of Nebraska College of Medicine was established in Lincoln in 1883 and in 1902 the Omaha Medical College became a part of the University of Nebraska and has continued with the present title College of Medicine University of Nebraska The instruction of the first two years was given at Lincoln and of the last two years at Omaha until 1913 when the work of all four years was transferred to Omaha Coeducational since 1882. Three years of college work are required for admission The B S degree in medicine is conferred at the end of the second year The fees average $450 per academic year nonresidents are charged $610 The registration for 1950-1951 was 336 graduates 82 The last session for seniors began Sept 11 1950 and ended May 26 1951 The last session for freshmen sophomores and juniors began Sept 11 1950 and ended June 2 1951 The next session will begin Sept 15 1951 and will end June 27 1952 The Dean is Harold C. Lueth M.D

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue—Organized in 1838 The first class graduated in 1839 It became the Medical Department of Union University in 1873 In 1915 Union University assumed educational control Coeducational since 1915 The requirement for admission is three years of college work. The fees average $775 per academic year The registration for 1950-1951 was 193 graduates 39 The last session began on Sept. 25 1950 for the freshmen and sophomores and ended on June 16 1951 the last session for the juniors began on Sept. 11 1950 and ended on May 19 1951 and for the seniors the last session began June 1 1950 and ended May 31 1951 The present senior year began on June 1 1951 and will end May 31 1952 The next session for the freshmen sophomores and juniors will begin on Sept. 10 1951 and will end on May 29, 1952. The Dean is James Allan Campbell M D

Brooklyn

State University of New York College of Medicine at New York City, 350 Henry Street Zone 2—Originally organized in 1858 as the collegiate department of The Long Island College Hospital The first class was graduated in 1860 and the last class in 1930 Was chartered in 1930 as Long Island College of Medicine with the first class graduated in 1931 and the last in 1949 It was merged with the State University of New York on April 5 1950 and the first class under the University was graduated in June 1950 It is coeducational. Three years of collegiate work, including specified courses are required for admission The fees are $715 per academic year The registration for 1950-1951 was 494 graduates 96. The last session for seniors began Sept. 11 1950 and ended June 2 1951 The last session for freshmen sophomores and juniors began on Sept. 18 1950 and ended on June 9 1951 The next session begins for freshmen sophomores and juniors on Sept. 17 1951 and ends June 7 1952 For seniors the next session will begin Sept. 10 1951 and will end May 31 1952 The Dean is Jean A. Curran M D

Buffalo

University of Buffalo School of Medicine 24 High Street—Organized in 1846 The first class graduated in 1847 It absorbed the Medical Department of Niagara University in 1898 Coeducational since organization. The minimum requirement for admission is four years of collegiate work including certain prescribed science subjects The fees average $828 The registration for 1950-1951 was 267, graduates 64 The last session began Sept. 25 1950 and ended June 16 1951 for freshmen sophomores and juniors and on June 9 1951 for seniors The next session will begin Sept. 24 1951 and end June 14 1952 for freshmen sophomores and juniors and will begin Sept. 4 1951 and end June 7 1952 for seniors. The Dean is Stockton Kimball, M D

New York

Columbia University College of Physicians and Surgeons 630 West One Hundred and Sixty Eighth Street—The medical faculty of Columbia College then known as King's College was organized in 1767 Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons which had received an independent charter in 1807 In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College This merger became permanent by legislative enactment in 1891 Columbia College became Columbia University in 1896 The medical school has been coeducational since 1917 Three years of collegiate work are required for admission. Fees average $800 per academic year The registration for 1950-1951 was 457 graduates 109 The last session began on June 5 1950 and June 1 1950 for juniors and seniors respectively, and ended on June 2 1951 The last session for freshmen and sophomores began on Sept 11 1950 and ended June 2 1951 The present session began on June 4 1951 for the juniors and seniors and will end May 31 1952 and will begin on Sept. 17 1951 for the freshmen and sophomores and will end May 31 1952 The Dean is Willard C. Rappleye M D

Cornell University Medical College, 1300 York Avenue—Organized in 1898 Coeducational since organization First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City All students matriculated must be graduates of approved colleges or scientific schools or seniors *in absentia* who will receive the bachelor degree from their college on successful completion of the first year of the medical course The fees average $825 a year The registration for 1950-1951 was 335 graduates 87 The last session began for senior students July 10 1950 and ended June 12, 1951 The freshmen sophomore and junior classes began Sept. 14 1951 and ended June 12, 1952 The present session for seniors began on July 9 1951 and will begin for the remaining three classes on Sept. 13 1951 and all classes will end June 11 1952 The Dean is Joseph C Hinsey Ph.D Assistant Dean Lawrence W Hanlon, M D

New York Medical College Flower and Fifth Avenue Hospitals, 1 East 105th Street New York 29—Organized in 1858 Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869 the title New York Homeopathic Medical College and Hospital in 1887 the title New York Homeopathic Medical College and Flower Hospital in 1908 the title New York Medical College and Flower Hospital in 1936 the present title of New York Medical College Flower and Fifth Avenue Hospitals June 22 1938 The first class graduated in 1861 Coeducational since 1919 Three years of college work is the minimum requirement for admission but a degree is preferred The fees average $750 per academic year The registration for 1950-1951 was 480 graduates 112. The last session began Sept. 18 1950 and ended June 6, 1951 The next session will begin Sept. 17 1951 and will end June 4 1952 The President and Dean is J A W Hetrick, M D

New York University College of Medicine, 477 First Avenue Zone 16—This is the undergraduate medical college of the New York University Bellevue Medical Center which comprises also the Post-Graduate Medical School and the University Hospital.—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College In 1898 it united with the Bellevue Hospital Medical College organized in 1861 under the name of University and Bellevue Hospital Medical College In 1935 the name was changed to New York University College of Medicine In 1947 the charter of the University and the statutes were amended, establishing the New York University Bellevue Medical Center which includes the College of Medicine Coeducational since 1919 Entrance requirements give preference to those who have completed not less than three full years in an approved college of arts and sciences The fees average $800 per academic session The registration for 1950-1951 was 488 graduates 119 The last session began Sept. 18 1950 for freshmen sophomores juniors and seniors and ended May 19 1951 for freshmen sophomores and June 9th for juniors and May 12th for seniors The next session begins Sept. 24 1951 for all classes and ends May 24 1952 for freshmen and sophomores June 14 1952 for juniors and May 17 1952 for seniors The Dean is Currier McEwen M D

Rochester

University of Rochester School of Medicine and Dentistry 260 Crittendon Boulevard, Zone 7—Organized in 1925 as the Medical Department of the University of Rochester Coeducational since organization. Three years of collegiate work are required for admission The fees are $600 per academic year The registration for 1950-1951 was 280 graduates 66 The last session began Sept. 18 1950 and ended June 9 1951 The next session will begin on Sept 17 1951 and will end on June 7, 1952. The Dean is George H Whipple M D

Syracuse

***State* University of New York at Syracuse, College of Medicine** 766 Irving Avenue Zone 10—Organized in 1872 when the Geneva Medical College chartered in 1834 was removed to Syracuse under the title 'The College of Physicians and Surgeons of Syracuse University Assumed title Syracuse University College of Medicine in 1875 when a compulsory three year graded course was established The College of Medicine was merged with the State University of New York on June 26 1950 when the present title was assumed The first class graduated in 1873 and a class graduated each subsequent year In 1889 the amalgamation with the university was made complete Course extended to four years in 1896 Coeducational since organization Three years of a recognized college course are required for admission The fees average $800 per academic year The registration for 1950-1951 was 232 graduates 48 The last session began Sept. 5 1950 and ended June 4 1951 The next session for all classes will begin Sept. 4 1951 and end June 2 1952 The Dean is William R. Willard M D

NORTH CAROLINA

Durham

Duke University School of Medicine—Organized in 1930 The first class was admitted Oct 1 1930 Coeducational The premedical requirement is three years of college work. The academic year consists of two semesters in the first year and three quarters each in the sophorome junior and senior years There is no summer quarter between the first and second year but in the two clinical years the subjects of the autumn winter and spring terms are repeated in the summer quarter This accelerated schedule is optional and students may take the two semesters of their first year and three quarters in each of their subsequent years and receive their certificates in four calendar years or if they receive permission from the curriculum committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one quarter calendar years The B S degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years Active duty with the Army Navy or Public Health Service can replace the second year The fees are $750 for three quarters The registration for 1950-1951 was 310 graduates 76 During 1951 the quarters begin Jan 3 March 27 July 2, Oct 1 and end March 17 June 9 Sept. 15 and Dec 15 The next freshman class will be enrolled Oct. 1 1951 and will end June 7 1952. The Dean is Wilburt C. Davison M.D

Winston Salem

Bowman Gray School of Medicine of Wake Forest College Zone 7—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum In 1941 the school was moved to Winston Salem and expanded to a complete four year medical school under its present name Coeducational Three years of college work are required for admission Clinical departments operate four quarters in the year however the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research for study elsewhere or for earning money to help defray expenses for their education Tuition is $750 per school year The registration for 1950-1951 was 222 graduates 61 The last session for the freshman class began Oct. 2 1950 sophomores Oct. 2 1950 juniors and seniors July 10 1950 and ended for freshmen sophomores, juniors, and seniors on June 9 1951 The present junior and senior classes began July 9 1951 and will end June 14 1952 The next freshman and sophomore classes will begin Oct. 1 1951 and will end June 14 1952. The Dean is C. C. Carpenter M.D and the Associate Dean is Frank R. Lock, M D

OHIO

Cincinnati

University of Cincinnati College of Medicine Eden and Bethesda Avenues—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852) The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896 Under a similar agreement March 2 1909 the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken Present title assumed in 1915 Coeducational since organization. Three years of collegiate work are required for admission. Liberal arts students of the University of Cincinnati may enroll for the seven year combined liberal arts and medical program The B.S degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year Tuition is as follows for legal residents of Cincinnati $575 a year plus breakage fees ($125 additional for those not legal residents) The registration for 1950-1951 was 350 graduates 84 The last session for freshmen sophomores juniors and seniors began Sept 25 1950 and ended June 2, 1951 The next session for juniors and seniors will begin Sept. 6 1951 and for freshman and sophomores will begin Sept. 24 1951 and will end May 31 1952 The Dean is Stanley Dorst M D

Cleveland

Western Reserve University School of Medicine 2109 Adelbert Road Zone 6—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College The first class graduated in 1844 The school assumed the present title in 1881 In 1910 the Cleveland College of Physicians and Surgeons was merged Coeducational since 1919 Students are required to have three years of college work for admission four years preferred The fees average $800 per academic year The registration for 1950-1951 was 324 graduates 76 The last session began Sept. 20 1950 for freshmen and sophomores and ended June 9 1951 For juniors the last session began Sept. 13 1950 and ended June 2, 1951 For seniors the last session began Aug 28 1950 and ended June 13 1951 The next session for freshmen and sophomores will begin Sept. 19 1951 and will end May 31 1952 For juniors the session dates will be Sept. 12 1951 to May 31 1952 and for seniors from Aug 27 1951 to June 11 1952. The Dean is Joseph T Wearn M D

Columbus

Ohio State University College of Medicine, Neil and Eleventh Avenues Zone 10—The present College of Medicine became a part of The Ohio State University in 1914 It incorporates all the previous medical college interests in central Ohio standing upon a foundation of six medical schools The Medical Department of Willoughby University of Lake Erie, 1834-1846 The Willoughby Medical College of Columbus 1846 1847 The Starling Medical College 1847 1907 the Columbus Medical College 1875 1892 The Ohio Medical University 1892 1907 Starling-Ohio Medical College 1907 1914 Graduates of these colleges by action of the Board of Trustees are considered alumni of The Ohio State University Coeducational since organization Three years of collegiate work are required for admission Tuition fees average $480 per academic year and $225 additional for nonresidents The registration for 1950-1951 was 396 graduates 76 The last session began on Oct. 3 1950 and ended June 8 1951 The next session will begin Oct 2 1951 and end June 6 1952 The Dean is Charles A Doan M D

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine, 800 North East Thirteenth Street Zone 4—Organized in 1900 Until 1910 gave only the first two years of the medical course at Norman Oklahoma, after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University The first class graduated in 1911 Coeducational since organization A new medical school building and a second teaching hospital became available in 1928 and since September of that year the entire four year course has been given in Oklahoma City Prerequisites for admission are three years—90 semester hours The fees for residents of Oklahoma are $350 nonresidents $700 The registration for 1950-1951 was 280 graduates 65 The last session began Sept. 18 1950 and ended June 4 1951 The next session will begin Sept 17 1951 and will end June 2 1952 for the first three classes The senior session began June 18 1951 and will end June 2 1952 The Dean is Mark R Everett Ph D

OREGON

Portland

University of Oregon Medical School 3181 S W Sam Jackson Park Road Zone 1—Organized in 1887 The first class graduated in 1888 and a class graduated each subsequent year except 1898 The Willamette University Medical Department was merged in 1913 Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are $450 a year for residents of Oregon and $180 a year additional for nonresidents plus a breakage deposit of $15 a year for the first two years and $10 a year for the last two years The registration for 1950-1951 was 291 graduates 71 The last session began Oct. 2 1950 and ended June 15 1951 The next session will begin Oct 1 1951 and will end June 13 1952 The Dean is D W E. Baird M D

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia 235 North Fifteenth Street, Zone 2—Formed by the successive union of several institutions The Washington Medical College of Philadelphia was chartered in 1853 changed its name to The Hahnemann Medical College of Philadelphia in 1867 and in 1869 absorbed the Homeopathic Medical College of Pennsylvania (founded in Philadelphia 1848) It assumed its present name in 1885 The first class graduated in 1849 Coeducational since 1941 A minimum of three years of collegiate work in an approved college of arts and sciences is required for admission Fees for 1951 1952 sessions are respectively for the first year second year third year and fourth year classes $750 $750 $750 and $775 The registration for 1950-1951 was 347 graduates 77 The last session began for all students Sept. 11 1950 and ended for the first and second year classes on June 2 1951 for third year class June 8 1951 and for the fourth year class on June 14 1951 The next session for all classes will begin Sept 10 1951 and will end for the first and second year classes June 7 1952 for the third year class June 13 1952 and for the fourth year class June 19 1952 The Dean is Charles L. Brown M D

Jefferson Medical College of Philadelphia 1025 Walnut Street —Organized in 1825 as the Medical Department of Jefferson College Canonsburg Pa It was chartered with its present title in 1838 Classes have been graduated annually beginning in 1826 In 1838 a separate university charter was granted without change of title since which time it has continued under the board of trustees For the class entering in 1951 the minimum entrance requirement will be three years of college work The tuition fee is $700 a year The registration for 1950-1951 was 649 graduates 161 The last session began for all classes on Sept 11 1950 and ended for freshmen on June 7, 1951 and for sophomores on June 9 1951 for juniors and seniors on June 6 1951 Graduation was June 15, 1951 The next session will begin for freshmen and sophomores on Sept. 10 1951 for juniors and seniors on Aug 27 1951 The Dean is George Allen Bennett M D

Temple University School of Medicine, 3400 North Broad Street Zone 40—Organized in 1901 The first class graduated in 1904 Coeducational since organization Three years of collegiate work are required for admission The fees average $800 per academic year The registration for 1950 1951 was 500 graduates 123 The last session began Sept 11 1950 and ended June 14 1951 The next session will begin Sept. 10 1951 and will end June 28 1952 The Dean is William N Parkinson M D

University of Pennsylvania School of Medicine, Thirty-Sixth and Pine Streets—Organized in 1765 Classes were graduated in 1768 and in all subsequent years except 1772 and 1775 1779 inclusive The original title was the Department of Medicine College of Philadelphia The present title was adopted in 1909 It granted the first medical diploma issued in America In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school Coeducational since 1914 Three years of collegiate work is required for admission The tuition fee is $800 with a deposit fee of $15 a general fee including student health of $20 and a matriculation fee of $5 The registration for 1950 1951 was 504 graduates 129 The last session began Sept 25 1950 and ended June 13 1951 The next session will begin Sept 10 1951 and will end June 11 1952 The Dean is John McK Mitchell M D

Woman's Medical College of Pennsylvania, Henry Avenue and Abbottsford Road Zone 29—Organized in 1850 Classes were graduated in 1852 and in all subsequent years except 1862 At least three years of collegiate work are required for admission and candidates with a degree are given preference The curriculum covers three years of thirty-six weeks each and one year of forty weeks Total fees are $810 yearly The registration for 1950-1951 was 186 graduates 39 The last session began Sept 11 1950 and ended June 12 1951 The next session will begin Aug 6 1951 for fourth year and Sept 13 for all others and will end June 12 1952 The Dean is Marion Fay Ph D

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O Hara Street—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh removing to the university campus in 1910 The first class graduated in 1887 Coeducational since 1899 Entrance requirements are three years of collegiate work The total fees are $700 each year The registration for 1950-1951 was 366 graduates 80 The last session began Sept 11 1950 and ended June 13 1951 The next session will begin on Sept 10 1951 and will end June 11 1952 The Dean is William S McEllroy M D

SOUTH CAROLINA

Charleston

Medical College of the State of South Carolina, 16 Lucas Street Zone 16—Organized 1823 as the Medical College of South Carolina The first class graduated in 1825 In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they merged in 1838 Classes were graduated in all years except 1862 to 1865 inclusive Coeducational from 1895 to 1912 when privileges for women were withdrawn being restored in 1917 At least three years of collegiate work are required for admission The total fees average $425 each year for residents of South Carolina and $1 500 for nonresidents of the state The registration for 1950-1951 was 233 graduates 57 The last session began on Sept 28 1950 and ended June 7 1951 The next session will begin on Sept 27 1951 and will end June 5 1952 The President is Kenneth M Lynch M D and the Dean is John T Cuttino M D

TENNESSEE

Memphis

University of Tennessee College of Medicine 847 Union Avenue Zone 3—Organized in 1876 at Nashville as Nashville Medical College First class graduated in 1877 and a class graduated each subsequent year Became Medical Department of University of Tennessee in 1879 In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee This union was dissolved in 1911 The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor In 1911 it moved to Memphis where it united with the College of Physicians and Surgeons The Memphis Hospital Medical College was merged in 1913 Lincoln Memorial University Medical Department was merged in 1914 Coeducational since 1911 Two years of collegiate work are required for admission The B S degree is conferred on students completing the science medical curiculum of the University The fees are $175 quarterly For residents of the state the charge is reduced $50 each quarter The registration for 1950-1951 was 588 graduates 150 During the next academic year the quarters begin September January March and July The Dean is O W Hyman Ph D

Nashville

Meharry Medical College Eighteenth Avenue North and Meharry Boulevard Zone 8 (For Negro Youth)—Organized in 1876 as the Meharry Medical Department of Central Tennessee College which became Walden University in 1900 First class graduated in 1877 Obtained new charter independent of Walden University in 1915 Coeducational since 1876 Two years of college work in a school of liberal arts are required for admission Tuition and fees are first year $530, second year $515 third year $495 fourth year $510 The curriculum covers four academic years of thirty four weeks each In September 1942 Meharry Medical College instituted the quarter system. The registration for 1950-1951 was 245 graduates 56 The last session began on Sept 25 1950 and ended on June 2 1951 The next session begins on Sept 24 1951 and will end on June 6 1952 The Chairman of the Interim Committee is Robert A Lambert M D the Dean is Michael J Bent M D

Vanderbilt University School of Medicine, Twenty First Avenue South at Edgehill Zone 4—The school was founded in 1874 The first class graduated in 1875 Coeducational since 1925 For matriculation students must be graduates of collegiate institutions of recognized standing or seniors in absentia who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine The course covers four academic years of nearly nine months each The fees average $813 per academic year The registration for 1950-1951 was 205 graduates 54 The last session began Sept 25 1950 and ended June 10 1951 The next session will begin Sept 24 1951 and will end June 8 1952 The Dean is John B Youmans M D

TEXAS

Dallas

Southwestern Medical School of the University of Texas, 2211 Oak Lawn —Organized in 1943 The first class graduated March 20 1944 Coeducational since organization Became a branch of the University of Texas, Sept 1 1949 The medical college is operated on the regular program offering three terms of twelve weeks each per academic year The tuition fees for residents average $125 per year The nonresident fee is $250 per year Three years of college work are required for admission The registration for 1950-1951 was 342 graduates 65 The last session began Sept. 6 1950 and ended June 5 1951 The next session will begin Sept 4 1951 and will end June 3 1952. Executive Officer James Pinckney Hart Chancellor University of Texas

Galveston

University of Texas School of Medicine 900 Strand—Organized in 1890 The first class graduated in 1892. Coeducational since organization Baccalaureate degree (B A or B S) will be required beginning with freshman class of September 1952 provided military situation makes this possible. A few outstanding students with only three years of work may be accepted at the discretion of the Admission Committee. The fees average $113 per academic year including health fees for medical care and hospitalization The registration for 1950-1951 was 495 graduates 96 The last session began on Sept. 12 1950 and ended June 2 1951 The next freshman class will matriculate Sept 18 1951 and the sophomore junior and senior classes will matriculate on Sept 24, all classes will end June 7 1952 The Vice President is Chauncey D Leake Ph D and D Bailey Calvin Ph D is Dean of Student and Curricular Affairs.

Houston

Baylor University College of Medicine Texas Medical Center—Organized in 1900 at Dallas as the University of Dallas Medical Department In 1903 it took its present name and became the Medical Department of Baylor University It acquired the charter of Dallas Medical College in 1904 The school was moved to Houston in 1943 Coeducational since organization The first class graduated in 1903 Entrance requirements are three years of collegiate work The course covers four years of eight months each The fees are respectively $656 $646 $631 $656 The registration for 1950-1951 was 351 graduates 78 The last session began Oct 2 1950 and ended June 11 1951 The next session will begin Oct. 1 1951 and will end June 9 1952 The Dean is W H Moursund M D

UTAH

Salt Lake City

University of Utah College of Medicine—Organized in 1905 Coeducational since organization Four year curriculum established March 1943 Three years of collegiate work are required for admission. The next freshman class will be admitted in September 1951 All subsequent freshman classes will begin in September of each year Classes are scheduled during three academic quarters (12 weeks) each calendar year Applications for admission (complete) must be submitted 9 months prior to opening date The fees for each quarter average $455 (resident) there is a non resident fee of $50 each quarter The registration for 1950-1951 was 202 graduates 49 The next session for freshmen will begin Sept 24 1951 and will end in June 1952 The present session for sophomores began March 1951 and will end March 1952. The present session for juniors began Jan 1951 and will end August 1952 and December 1952 The next session for seniors will begin Sept 1952 and Jan 1953 The Dean is John Z. Bowers M D

VERMONT

Burlington

University of Vermont College of Medicine Pearl Street College Park —Organized with complete course in 1822 Classes graduated in 1823 to 1836 inclusive when the school was suspended It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920 Three years of college work are required for admission For residents of Vermont the tuition fee averages $550 per session Nonresidents are charged an additional $150 each session A $25 fee is charged for the doctor s degree Registration for 1950-1951 was 168 graduates 38 The last session for freshmen sophomores and juniors began Sept. 9 1950 and ended June 10 1951 The last senior class began July 5 1950 and graduated June 10 1951 The present senior class began June 25 1951 the next freshman sophomore and junior classes will begin Sept 8 1951 and all classes will end June 15 1952 The Dean is William Eustis Brown M D

VIRGINIA

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827 Classes were graduated in 1828 and in all subsequent years except 1865 Coeducational since the session of 1920-1921 Three years of college work are required for admission For residents of Virginia the tuition and other required fees are $459 per academic year for nonresidents, $859 The registration for 1950-1951 was 288 graduates 71 The last session began Sept. 18 1950 and ended June 11 1951 The next session will begin Sept 17 1951 and will end June 9 1952. The Dean is Vernon W Lippard M D

Richmond

Medical College of Virginia, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College Present title was taken in 1854 In 1913 the University College of Medicine was merged. Coeducational since 1918 Classes were graduated in 1839 and in all subsequent years Three years of collegiate work as a minimum are required for admission Preference however is given to applicants with a baccalaureate degree Fees average $510 per academic year Nonresidents are charged an additional $325 each year The registration for 1950-1951 was 363 graduates 95 The last session began Sept. 11 1950 for second third and fourth year classes and ended June 5 1951 The last session for the first year class began Sept. 7 1950 and ended June 5 1951 The subsequent session will begin Sept. 6 1951 for the first year class and Sept 10 1951 for the second third and fourth year classes and will end June 3 1952. The Dean is John B Truslow M D The Associate Dean and Chairman of the Admissions Committee is Mr George W Bakeman

WASHINGTON

Seattle

University of Washington School of Medicine, Seattle 5—Established by the Legislature in 1945 and organized as one of the professional schools in the Division of Health Sciences of the University of Washington in 1946 The first class graduated in 1950 Coeducational The minimum requirement for admission is three years of collegiate work Tuition fees are $363 each year for residents of Washington and Alaska and $558 for nonresidents of these areas. Registration for 1950-1951 was 242 graduates 48 The first three classes were limited to 50 students but with the class entering in 1949 this number was raised to 75 The last session began Sept. 27 1950 and ended June 9 1951 The next session will begin Sept. 24 1951 and will end June 14 1952. The Dean is Edward L. Turner M D

WISCONSIN

Madison

University of Wisconsin Medical School 418 North Randall Avenue Zone 6.—Organized 1907 Gave only the first two years of the medical course until 1925 when the clinical years were added. Coeducational since organization The entrance requirement is three years of collegiate work Fees for the first second and third years $280 for the fourth year $190 per academic year for residents. An additional fee of $300 per year is charged nonresidents. Registration for 1950-1951 was 312 graduates 71 The last session for freshman sophomore and junior students began Sept. 18 1950 and ended June 15 1951 The last senior class began June 26 1950 and ended June 15 1951 Freshman sophomore and junior classes will begin Sept. 24 1951 and will end June 20 1952 The senior class began June 25 1951 and will end June 20 1952 The Dean is William S Middleton M D

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization Three years of collegiate work are required for admission. The fees are $750 per academic year The registration for the 1950-1951 session was 372 graduates 87 The last session began Sept. 25 1950 and ended June 3 1951 The last senior class began June 12 1950 and ended June 9 1951 The next session for freshman, sophomore and junior students will begin Sept 10 1951 and will end May 31 1952. The 1951 1952 session for seniors began June 11 1951 and will end June 7 1952 The Dean is John S Hirschboeck M D

APPROVED MEDICAL SCHOOLS IN CANADA

CANADA

Alberta

University of Alberta Faculty of Medicine, Edmonton.—Organized in 1913 Coeducational since organization. Has given complete medical course since 1924 New course—three years premedical four years of medicine—offered with the session 1947 1948 Tuition for the first and second years is $425 per session and for the third and fourth years is $450 per session The registration for 1950-1951 was 216 graduates 57 The last session began Sept 5 1950 and ended April 30 1951 The next regular session will begin Sept. 4 1951 and end April 30 1952 The Dean is John W Scott, M D

Manitoba

University of Manitoba Faculty of Medicine, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886 and a class graduated each subsequent year The college transferred all its property to the University of Manitoba in 1919 and assumed the present title Coeducational since organization Matriculation requirements include three years of collegiate work in the faculty of arts and sciences of a recognized university The course extends over four years of eight months each and a hospital internship The fees average $445.25 yearly The registration for 1950-1951 was 294 graduates 67 The last session began Sept 11 1950 and ended May 15 1951 The next session will begin on Sept 17 1951 and will end on May 15 1952. The Dean is Lennox G Bell, M D

Nova Scotia

Dalhousie University Faculty of Medicine Morris Street Halifax.—Organized in 1867 Incorporated as the Halifax Medical College in 1875 Reorganized as an examining faculty separate from the Halifax Medical College in 1885 In 1911 in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College the work of the latter institution was discontinued and a full teaching faculty was established by the university First class graduated in 1872. Coeducational since 1871 Requires for matriculation two years of arts The regular medical course covers four years and a hospital internship of one year approved by the medical faculty The fees average $410 yearly nonresidents $250 additional fee The last session for freshmen sophomores and juniors began Sept. 5 1950 and for seniors May 8 1950 all classes ended May 15 1951 The registration for 1950-1951 was 221 graduates 55 The next session for all classes will begin Sept. 5 1951 and will end May 13 1952 The Dean is H G Grant M D

Ontario

Queen s University Faculty of Medicine, Kingston—Organized in 1852 First class graduated in 1855 and a class graduated each subsequent year The course consists of six sessions of thirty teaching weeks the sixth session being devoted entirely to clinical work in the hospitals affiliated with the University The latter is not considered an internship Fees for each of the six years amounts to $413 75 The degrees awarded are M D C M Freshmen will be admitted annually Registration for 1950-1951 was 347, graduates 52 The last session began Sept. 18 1950 and ended May 12 1951 The next session will begin Sept 17 1951 and will end May 10 1952. The last Convocation was held June 2 1951 The Dean is G Harold Ettinger M D The Secretary of the Faculty of Medicine is H D McEwen Ph D

University of Ottawa Faculty of Medicine.—Organized in September 1945 The degree of M D is conferred after 1 year premedical studies 4 years medicine and 1 year of internship The minimum acadmic requirements for admission to the premedical year are the Ontario Grade XIII Honour Matriculation or equivalent certificates Students who have obtained their bachelor degree in arts or in science and who have completed the required courses in biology chemistry and physics may be admitted to the First Year of Medicine An internship is required for graduation The registration for 1950-1951 in the medical and premedical years was 250 graduates 43 The next session for the premedical year will begin on Sept 14 1951 and for first second third and fourth medical years on Sept 11 The session for the premedical year will end in May 1952 and for the medical years in June 1952 Students graduate in May The Dean is A L. Richard M D

University of Western Ontario Faculty of Medicine 346 South Street London.—Organized in 1881 as the Western University Faculty of Medicine First class graduated in 1883 and a class graduated each subsequent year Present title in 1923 The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913 Coeducational since 1913 The normal course of study covers two honor college years of nine months each and four years of nine months each in the Faculty of Medicine The total fees to residents of Canada for the last four years are $515 a year The registration for 1950-1951 was 243 graduates 61 The last session began Sept 11 1950 and ended May 24 1951 The next session begins Sept 10 1951 and ends May 22 1952 The Dean is J B Collip M D

University of Toronto Faculty of Medicine Toronto 5—Organized in 1843 as the Medical Faculty of King s College Abolished in 1853 Reestablished in 1887 In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University Coeducational since 1903 The degree of M D is conferred after 4 years in the study of medicine Admission to the medical course is gained following honour matriculation and after two years in the study of premedical requisites in the University of Toronto A certain number are admitted each year to the first medical year who hold arts degrees from recognized universities and who have covered the necessary work in the humanities and sciences The B Sc. (Med.) degree may be conferred for special work or investigation as a graduate degree or under certain circumstances for an extra year's work as an undergraduate The registration for 1950-1951 in the medical and premedical years was 964 graduates 174 The next session for first and second premedical years will begin on Sept 26 1951 and for first, second third and fourth medical years on Sept. 24 1951 The session for premedical years will end on April 26 1952 and for medical years on May 17 1952 Students will graduate annually in June The Dean is J A MacFarlane M B

Quebec

McGill University Faculty of Medicine 3640 University Street Montreal. —Founded in 1823 as Montreal Medical Institution became the Medical Faculty of McGill University in 1829 first class graduated under the university auspices in 1833 No session between 1836-1839 owing to political troubles In 1905 it absorbed the Faculty of Medicine of the University of Bishop s College. Coeducational since 1917 Three years of collegiate work are required for admission. The total fees for each of the four medical years are $525 The registration for 1950-1951 was 457 graduates 115 The last session began Sept. 6 1950 and ended June 2, 1951 for the first three classes and April 28 1951 for the senior class The next session will begin Sept. 5 1951 and will end May 31 1952 for the first three classes and April 26 1952 for the seniors. The Dean is C. Lyman Duff M.D

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery In 1891 by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920 A class was graduated in 1843 and each subsequent year Coeducational since 1925 The requirements for admission are B.A degree (or its equivalent) with a supplementary year in the Faculty of Pure Science (or an entrance examination on the Premedical subjects) An internship is required for graduation. The fees are $390 yearly for residents and $465 yearly for nonresidents The registration for 1950-1951 was 398 graduates 92. The last session began Sept. 18 1950 and ended May 12 1951 The next session will begin Sept 11 1951 and will end May 3 1952. The Dean is Wilbrod Bonin M.D

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine organized in 1848 became in 1852 the Laval University Faculty of Medicine first class graduated in 1855 and a class graduated each subsequent year The fees for each of the medical years average $300 for residents of Canada. Nonresidents are charged an extra fee of $200 each year The premedical requirement is a B.A. degree or its equivalent. The registration for 1950-1951 was 626 graduates 141 The last session began Sept. 13 1950 and ended June 1 1951 The next session will begin Sept. 12 1951 and will end June 1 1952 The Dean is Charles Vézina M.D

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine.—Organized in 1903 Coeducational since organization A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work or ninety semester hours of credit. Fees average $410 50 annually There is a non resident fee of $200 The school operates on an accelerated program by accepting two freshman classes each session The registration for 1950-1951 was 122 The last session began July 31 1950 and ended May 12 1951 Additional freshman class was admitted Jan 29 1951 and will end Oct. 27 1951 The sophomore session began July 10 1950 and ended March 17 1951 An additional sophomore session began Nov 21 1950 and ended July 28 1951 The present freshman class began July 16 1951 and will end April 30 1952 The present sophomore class began June 11 1951 and will end Feb 23 1952. The Dean is David Schultz Pankratz M D

MISSOURI

Columbia

University of Missouri School of Medicine—Organized at St. Louis in 1845 was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909 Coeducational since 1872. The entrance requirement is three years of collegiate work. The B S degree in medicine is conferred at the end of the second year Total fees for the first year are $236 50 for the second year $222.50 The registration for 1950-1951 was 89 The last session began Sept 18 1950 and ended June 8 1951 The next session will begin Sept 11 1951 and will end June 5 1952 The Dean is Trawick H. Stubbs M.D

NEW HAMPSHIRE

Hanover

Dartmouth Medical School—Organized by Dr Nathan Smith in 1797 The first class graduated in 1798 It is under the control of the Trustees of Dartmouth College Courses of the third and fourth years were discontinued in 1914 Three years of college work and candidacy for the bache lor s degree are required for admission. Candidates for the A.B degree in Dartmouth College may substitute the work or the first year in medicine for that of the senior year The tuition is $800 for each year The registration for 1950-1951 was 49 The last session began on Sept. 24 1950 and ended June 17 1951 The next session will begin Sept 23 1951 and will end June 8 1952 The Dean is Rolf C Syvertsen M D

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890 Until 1902 this school gave only the work of the first two years when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903 A class was graduated each subsequent year including 1910 when the clinical department at Raleigh was discontinued Coeducational since 1914 Three years of college work are normally required for admission Certificates are awarded on the completion of two years work in medicine The tuition is $660 per year for residents for nonresidents an additional $600 per year The registration for 1950-1951 was 117 The North Carolina Legislature of 1947 appropriated funds for the expansion of the school to the full four years The full program will probably not get under way for a year or two The last session began Sept. 18 1950 and ended June 4 1951 The next session will begin Sept. 17 1951 and end on June 2 1952. The Dean is W Reece Berryhill M.D

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1905 Offers only the first two years of the medical course Coeducational since organization Three years work in a college of liberal arts are required for admission The B S degree in combined arts-medical course is conferred at the end of the second year The fees are $121 50 each year for resident students and $206.50 for nonresidents The registration academic year 1950-1951 was 65 The last session began Sept 18 1950 and ended June 4 1951 The next session will begin Sept. 24 1951 and will end June 10 1952 The Dean is W F Potter M D

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences—Organized in 1907 as the University of South Dakota School of Medicine Present title in 1937 Coeducational since organization Offers only the first two years of the medical course Three years work in a college of liberal arts are required for admission Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A.B degree The B S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A B degree The tuition is $303 for the first year residents and $303 for second year residents $513 for first year nonresidents and $513 for second year nonresidents Registration for 1950-1951 was 63 The last session began Sept. 4 1950 and ended June 7 1951 The next session for first and second year students will commence Sept. 3 1951 and will end June 6, 1952 for first year students and will end Aug. 15 1952 for second year students (There is a thirteen day break between the end of the didactic year for second year students and the four weeks of clerkship and month of clinical teaching at the Veterans Administration Hospital in Sioux Falls, South Dakota.) The Dean is Donald Slaughter M.D

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine.—Organized in 1912. Gives the first two years of the medical course but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B S. degree is conferred at the end of the second year Fees for residents of the state are respectively $258 and $268 nonresidents $150 additional each year The registration for 1950-1951 was 56 The last session began Sept. 18 1950 and ended June 4 1951 The next session will begin Sept. 17 1951 and will end June 2 1952 The Dean is Edward J Van Liere M.D

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN CANADA

Saskatchewan

University of Saskatchewan School of Medical Sciences, Saskatoon.—Organized in 1926. Coeducational Offers the first two years of the medical course Two years of university premedical work is required for admission The B.A. degree is conferred at the end of the second year The fees are $380 The registration for 1950-1951 was 62 The last session for freshmen began Sept. 19 1950 and ended June 22, 1951 The next session will begin Sept. 24 1951 and will end June 21 1952. The Dean is W Stewart Lindsay M B

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FIFTY-FIRST ANNUAL REPORT ON MEDICAL EDUCATION

The fifty-first annual report of the Council on Medical Education and Hospitals which appears in this issue of THE JOURNAL summarizes basic data concerning medical schools and students in the United States and Canada and presents information and statistics on many subjects of current importance

Last year's prediction that the freshman class might reach 7,500 within a few years already appears close to realization The 1950 freshman class totaled 7,182 students and the 1951 freshman class will number approximately 7,400 The total student enrolment of 26,191 exceeds last year's total by more than 1,000 and exceeds the total for 1940-1941, the last pre-war year, by almost 5,000 The full magnitude of this expansion in the capacity of the medical schools may be appreciated when it is realized that it is equivalent to the establishment of 15 new medical schools of average size These growing enrolments are reflected in the increasing size of the graduating classes This year's graduating class totaled 6,135, and by 1953 the number of graduates will almost certainly exceed even the peak of 6,389, reached in 1947 under the accelerated program when several schools graduated more than one class

The report reveals a trend which may indicate a decrease in the general level of competence of incoming medical students In the 1950 freshman class, the number of C students was 20%, as compared with 10% for the preceding year The most likely explanation for this trend is that the large backlog of veterans whose education was delayed by the war has largely disappeared While the schools can no longer draw from such an unusually large pool of able students as was available immediately after the war, there were still slightly more than three applicants for each opening in last year's freshman class

In recent years the report of the Council has repeatedly called attention to the large number of students in addition to regular undergraduate medical students who receive part or all of their instruction from the faculties of the medical schools This year figures were obtained which indicate for the first time the full magnitude of this additional load During 1950-1951 the medical schools provided instruction for more than 57,000 students in addition to their undergraduate medical students These additional students fall into many categories, ranging from students in technical schools and undergraduate courses to advanced graduate students and practicing physicians It is clear that, through the education it provides these students, a medical school makes a major contribution to a university's total program of education, a contribution that is not always recognized

Events of the past year have not yet made clear what the full effect of the present international crisis and the attendant partial mobilization will be on medical education The Joint Committee on Medical Education in Time of National Emergency has been active in studying this problem and in preparing plans for various contingencies In the fall of 1950 the Committee published a statement setting forth in detail its recommendations with respect to the conduct of medical education in a national emergency Early in the present year it prepared and circulated to the medical schools a pamphlet containing suggestions for supplementing the curriculum so as to prepare students to deal effectively with problems of civil defense and military medicine The committee has also been active in making recommendations with respect to the problem of insuring a continuing flow of medical students and medical graduates under a program of selective service or a program of universal military training and service One result of partial mobilization is already clear As long as the needs of the armed forces for physicians continue at their present levels, most able-bodied male graduates will have to interrupt their training at the end of one year of internship for a period of active military duty

Another, although indirect, effect of the current emergency was the decision of the Committee for the Survey of Medical Education that it would not be feasible to visit all medical schools as had been planned when the survey was initiated The survey completed its second year of field work in the spring of this year, at which time 41 of the 79 medical schools and schools of the basic medical sciences had been visited Recognizing that partial mobilization has resulted in increasing demands on the medical schools and recognizing that the schools individually and collectively are faced with urgent decisions on a number of policies, the committee believed that it could render more service to the medical schools and the public by preparing an early report of its findings to date than by continuing its field work. The committee is now addressing its full energy to the preparation of its report, which it is hoped will be published and ready for distribution by the spring of 1952

Although fewer vacancies on teaching staffs are reported this year than last year, medical schools are still experiencing some difficulty in recruiting teachers The total number of vacant full-time positions as of June 1951 was 235 as compared with 281 in 1950 and 441 in 1949 This continuing shortage of teachers underlines the importance of maintaining an adequate flow of graduate students in both the basic and clinical sciences even in the event of more extensive mobilization than that now in effect The need for continuing to train an adequate force of teachers is particularly important in view of the further expansion contemplated by several existing schools and the probability that several new medical schools will be established within the next few years

The report presents further evidence of interest on the part of medical schools in preparing students and recent graduates to serve as family physicians or general practitioners Fifty-four schools are sponsoring one or more programs designed to interest and prepare students for careers in general practice Among these are several that report that their entire educational program has been designed with the primary purpose of preparing students adequately for general practice

For the first time since the end of World War II, a reduction in attendance at postgraduate and continuation courses is reported Although the number of courses offered increased by more than 10%, attendance during 1950-1951 dropped by more than 20,000, or almost 30%, below the preceding year The explanation for this drop is not yet clear It may be due in part to the increased number of physicians entering military service on the one hand, or to the fact that the demand for refresher courses by medical officers who served during World War II has been met on the other hand The reduction in attendance, of course, must also raise the question as to whether postgraduate courses are being planned in a manner calculated to arouse the interest and satisfy the needs of the practicing physician

PROGRESS IN THE FINANCIAL SUPPORT OF MEDICAL SCHOOLS

The annual report on medical education published in this issue of THE JOURNAL reveals that the medical schools are making substantial progress in their struggle to secure more adequate financial support. For the coming academic year they report that their budgets will total $74,350,000 and that they expect to receive an additional $35,250,000 from outside agencies in grants for research and special teaching activities The schools thus will have a total of $109,600,000 available for education and research during the coming year

Earlier this year the Committee on Medical School Grants and Finances appointed by the Surgeon General of the Public Health Service published a report of the study it made of the expenditures and the needs of the medical schools during the academic year 1947-1948 The committee reported that in that year the medical schools spent a total of $70,551,000 for basic operations and for separately budgeted research This figure did not include the expense of maintaining clinical facilities Of the total of $109,600,000 available to the schools for the coming year, about $3,250,000 will be used to support clinical facilities This amount must be subtracted from the total to provide a figure that can be compared with the total expenditure as computed by the committee When this is done it is seen that the medical schools expect to have available in 1951-1952 approximately 36 million dollars more than they spent in 1947-1948

It is of interest to compare this figure with the estimate of the Surgeon General's Committee that the medical school's unmet needs as of 1947-1948 could be financed only by the expenditure of about 40 million dollars more annually than the schools were then spending for education and research In presenting this estimate the committee suggested that the figure of 40 million dollars should perhaps be discounted in part as representing wishes and aspirations The committee further stated that the schools could not absorb an additional 40 million dollars a year immediately but that that figure was a general measure of the level to which operating expenditures of the medical schools should rise in a period of years

It should be pointed out that not all the increase of 36 million dollars in the past four years is clear gain and that not all schools have shared proportionately Part of the increase has been offset by the loss in the purchasing power of the dollar, some of it has been used to support new or expanded activities not provided for in the estimate of 40 million dollars Account must also be taken of the fact that almost 40% of the gain of 36 million dollars is in the form of funds specifically earmarked for research and therefore not available for the schools' unrestricted use

The over-all picture, however, is one which warrants optimism that progress is being made even if unmet needs and some uncertainty regarding the future remain It is perhaps trite to comment that it is unlikely the time will ever come when all needs will have been met and all uncertainty dissipated

Perhaps one of the most important conclusions that may be drawn from this latest report is that the gap between unmet needs and available funds has been narrowed to a point where, if the National Fund for Medical Education and the American Medical Education Foundation could provide an annual fund of 5 to 10 million dollars, the gap that remains for many schools would be all but eliminated It would be a serious mistake to conclude that the battle for adequate financial support for medical education has been won, but it would be equally mistaken not to interpret the gain that has been made as a good omen for the future if the efforts of recent years are maintained

QUOTA PLAN FOR THE APPOINTMENT OF INTERNS DEFERRED

A large majority of the hospitals approved for intern training have accepted the recently announced program (THE JOURNAL, June 30, page 865) of the Council on Medical Education and Hospitals establishing a quota basis for the appointment of interns Some hospitals, however, have requested an increase in the number of internships for which they have been approved A few have protested the setting of any quota

The Council wishes to give every consideration to these requests and protests and is at present investigating and appraising them Therefore, since it will take time to do this, and in fairness to those hospitals that have accepted the quotas as established, the Council believes that the effective date of this program should be deferred until all hospitals have had an equal opportunity to have their requests reviewed When the quota program is fully established, it is planned that individual hospital quotas will be reviewed annually

In the meantime, however, the Council strongly urges, in the interest of stabilizing and improving the training of interns throughout the country, that all hospitals voluntarily cooperate in accepting the quota basis proposed by the Council for the appointment of interns for the year beginning July 1, 1952

NEED FOR BLOOD

The American National Red Cross has been responsible for the national blood program for the armed forces and has been active in the procurement of blood for civil defense The Department of Defense has been dependent on the Red Cross to supply the requirements of the Department throughout this period of national emergency incident to the Korean campaign As a result of the seriousness of the current situation and the need of the Department of Defense for blood plasma within the military departments, a directive has been issued by the Department to the three military services relative to the establishment of a Department of Defense blood collection program The directive reads

1 Department of Defense supplies of dried human blood plasma have been gravely depleted by the demands of the Korean campaign Its continued availability for military purposes is vital It is imperative that action be taken to insure that an adequate supply is at all times ready for use This means that every possible effort must be made to secure whole blood in quantity from all available sources

2 While the processing capacity for converting whole blood to plasma has been gradually increased, the quantities of blood received from civilian sources is today woefully inadequate, and well below processing capacity The essential reserve is not being created

3 Accordingly, the Department of Defense will begin immediately

(*a*) A continuous and vigorous campaign, in conjunction with the Red Cross, to persuade the civilian and military population to contribute whole blood to the Armed Forces

(*b*) To establish an Armed Forces blood donor program within the framework of the over-all campaign, the primary purpose of which shall be to obtain blood from the service personnel on military bases within the continental United States Civilian employees will be invited to participate

The American Medical Association has been asked for its cooperation in this serious and urgent defense program The help of individual physicians is needed, and they are asked to encourage others to participate It is only through active support of the defense program and discussion, at every opportunity, of the need for blood that sufficient amounts will become available

KEEPING THE FAMILY TOGETHER

Medical progress has cut the orphan problem in half since 1900 Although 371,000 children under 18 became orphaned by the death of a parent in 1948, the toll would have been twice that with the death rates of 1900 Likewise the number of marriages broken by the death of husband or wife would have been close to one million,[1] 50% greater than the number reported, 667,000 Chronologically, the process starts at birth with keeping both mother and newborn baby alive The probability of a child being left motherless at birth today is only one-eighth to one-seventh the probability that its mother would have been left motherless at birth, i e , maternal mortality has been sharply reduced in one generation Thus medical progress and longer life are increasing family stability in a period when many families are being broken for reasons other than the death of a parent

The age at death of a father has particular significance from the economic standpoint When the breadwinner of the family is gone, the heavy burden of providing for the home, in addition to rearing the children, is thrust upon the mother The younger the father at death, the heavier the mother's burden, for the greater is the number of years that must elapse before the children are self-supporting

In 1948, there were 91,000 minor children orphaned by the death of fathers under age 45 The 82,000 orphans who survived fathers dying at ages 45 to 54 constituted the greatest number for any age group Fathers who were 55 or over at the time of death left 67,000 children These figures clearly indicate that the majority of orphans are created by the death of middle-aged fathers, the child dependency problem is not as acute for the widow, since many of these children are not far from the age when they may become gainfully employed

The number of minor children becoming orphaned by the death of their mothers was about 132,000, a little more than half the number losing their fathers The widower, spending most of the day at his place of employment, is faced with the problem of providing care for the children while he is away This sort of situation frequently obliges the father to remarry

Thus, in an era when nonhealth factors are breaking up many homes, the sharp declines in mortality have allowed more families to remain intact, particularly until the children have reached their majority The community, too, has benefited by being relieved from the burden of supporting thousands of indigent widows and orphans Medicine has a social mission, and the best way the physician can contribute toward the accomplishment of that mission is to steadily improve the science and art of medicine

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[1] Lower Mortality Promotes Family Stability Statistical Bulletin Metropolitan Life Insurance Company 32 1 (May) 1951

ORGANIZATION SECTION

PUBLIC RELATIONS LITERATURE

Four pieces of complimentary literature for distribution to physicians, health groups, and the general public are currently being produced by the American Medical Association's Department of Public Relations Two brochures, one of them now available, are designed for use in doctors' offices The third publication will go to American Medical Association members, the fourth, a revision of the A M A Handbook, will be available to state and county society officers

An attractive, eight page brochure, called "A Doctor for You —What s Being Done to Give You the Best," is the first of the series to be completed In a brief, easy-to-read style it tells the nation that America's doctors "want enough doctors in the United States to meet the medical demands of every man, woman and child Physicians may get copies of "A Doctor for You" through their county and state medical societies The second popular piece, tentatively titled ' What *Is* the A M A?," will be available for similar distribution to the general public by December, 1951

Early this fall, all American Medical Association members will receive an information booklet on their national organization, briefly outlining its history, makeup, functions, and activities The comprehensive Handbook, scheduled for fall distribution to state and county society officers, is designed as a ready reference to American Medical Association councils, committees, bureaus and departments In addition to material contained in the current Handbook, the new publication will list executive personnel, outline recommended procedure to speed service from the Association, and provide a key to existing policy on membership and fellowship

BOOKLET ON GROUP PRACTICE

During the three years since the Bureau of Medical Economic Research published Bulletin 63, "An Annotated Bibliography of Group Practice, 1927-1947," a considerable number of books and articles on the subject of group practice have appeared A new publication, Bulletin 85, has recently been published by the Bureau Items published in 1948 to 1950 have been added, and an author index has been provided for the 317 items The brief annotations are designed to enable the reader to determine whether he should examine the published item As noted in the introduction, all published items relating to group practice have been included, even those which may involve the corporate practice of medicine, there are many items that deal with combinations of group practice and prepaid insurance Thus, the bibliography is not limited to group practice per se The annotations neither approve nor disapprove the ideas of the authors The sole purpose of this new bibliography is to serve as a reference work for those interested in group practice, broadly defined A copy of Bulletin 85 ('An Annotated Bibliography of Group Practice, 1927-1950," 72 pages) may be obtained without charge from *the Bureau of Medical Economic Research*, American Medical Association, 535 North Dearborn St , Chicago 10

CATALOG OF MOTION PICTURES

The catalog of motion pictures available through the Committee on Medical Motion Pictures has been revised Copies will be sent to the secretary of each county and state medical society This catalog lists sixty-two 16 mm films, most of which are at the professional level Fourteen of these films are suitable for showing to lay groups Eight new films have been added Copies are available on request from the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn St., Chicago 10

FEDERAL MEDICAL LEGISLATION

Public Assistance

Representative Reed of New York introduced H R. 5076, pertaining to federal grants in aid to states under the Social Security Act This bill would prohibit the withholding of federal funds due a state for use in certain public assistance programs if the only reason for withholding is the enactment or enforcement of legislation by a state providing for public access to records of the disbursement of funds under such program. Another bill, H R 5083, by Representative Mason of Illinois, would accomplish the same objectives by repealing provisions of the Social Security Act which require state plans for old-age assistance, aid to dependent children, aid to the blind, and aid to the permanently and totally disabled, to restrict the use or disclosure of information concerning applicants or recipients to purposes directly connected with the administration of such plans These two bills are similar in purpose to S 1099 (previously reported)

Increased Social Security Benefits

Senator Humphrey of Minnesota introduced S 1983, for himself and Senators Lehman, Kerr, Murray, and Langer This bill would amend the Social Security Act by increasing insurance payments to retired workers by $5 per month It would also increase the wife's benefit by $2 50 and a widow's benefit by $3 75 The maximum family benefit under this bill would be raised from $150 per month to $160, and the amount below which the total monthly family benefit would not be reduced by the maximum provisions is increased from $40 to $50 The bill does not call for higher rates of contribution than those already authorized by law

Investigation of Cancer Cures

Senator Langer of North Dakota introduced S Res 186, which would authorize an investigation of the efficacy of methods used in the treatment of cancer by institutions This resolution is similar to S Res. 142, by the same author, to investigate only the Hoxsey Cancer Clinic The new resolution would authorize the Senate Committee on Labor and Public Welfare to make a full and complete study and investigation of the efficacy of methods used in the treatment of cancer by any hospital or clinic which has been in operation for at least 10 years and which presents pathological proof of cures of internal cancer in at least five cases One other new provision authorizes the committee personally to inspect such clinics or hospitals and to seek information from the representatives of the Food and Drug Administration the National Cancer Institute, the American Cancer Society, and other persons or agencies having pertinent information

Social Security—Dentists

Representative Herter of Massachusetts introduced H R 4943, which proposes to extend the federal old age and survivors insurance system to persons engaged in the practice of dentistry It will be recalled that, when the social security laws were amended in the last Congress, physicians, dentists, and certain other persons were exempt from coverage

Veterans Presumption of Service Connected Poliomyelitis

Two bills have been introduced which would establish a presumption of service connection for poliomyelitis contracted within five years after separation from active service by World War II veterans who were prisoners of war These bills are H R 5197, introduced by Representative Corbett of Pennsylvania, and H R 5200, by Representative Fulton of Pennsylvania

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The summary of federal legislation was prepared by the Washington Office of the American Medical Association

MEDICAL NEWS

ARKANSAS

Faculty Appointments.—Dr James H. Growdon, associate professor of surgery since 1949, has been appointed professor and head of the department of surgery at the University of Arkansas School of Medicine, Little Rock. He replaces Dr Gilbert O Dean, who has resigned to enter private practice Dr William K. Jordan, formerly head of the division of neurology at the University of Washington School of Medicine, Seattle, has been appointed professor of neurology and head of the division of neurology in the department of psychiatry and neurology, effective Sept 1 J Walker Beck, Ph D has been named assistant professor of bacteriology and parasitology

CALIFORNIA

Dr Wood Heads University Cancer Institute.—Dr David A Wood, Stanford University pathologist, has been appointed director of the Cancer Research Institute of the University of California School of Medicine, San Francisco, effective Sept 1 He succeeds Dr Robert S Stone, professor of radiology, who has been acting director since the establishment of the Institute in 1948 Dr Wood became a member of the Stanford faculty in 1930 and has been affiliated with that institution since then. His active service during World War II included directorship of the Oak Knoll Laboratories, Oakland, for two years and the organization of blood banks at Treasure Island and Oak Knoll Dr Wood has been secretary of the Cancer Commission of the California Medical Association since 1945 He was secretary of the California division of the American Cancer Society from 1945 to 1949 and is now professional director for Region VI of the national organization

DELAWARE

State Medical Meeting.—The Medical Society of Delaware will hold its annual meeting at the Hotel DuPont in Wilmington Oct 8-10 Scientific sessions beginning Oct. 9 will be addressed by the following out-of state speakers

Douglas T Davidson Jr Boston Diagnosis and Treatment of Epilepsy
Richard G Coblentz, Baltimore, Craniocerebral Injuries.
C. Everett Koop Philadelphia Certain Aspects of Surgery of the Newborn
Leo E Farr Upton Long Island N Y Treatment of Nephrosis.
Hugh Montgomery Philadelphia Treatment of Peripheral Arterial Disease.
R. Ralph Bresler Philadelphia Industry s Challenge to Medicine.
Franklin L Payne Philadelphia Care of the Woman in the Postmenopausal Era.
O Spurgeon English Philadelphia Role of the General Practitioner in Counselling Before and After Marriage.
J Robert Willson Philadelphia Potential Dangers from the Incomplete Examination of the Pregnant Woman
P Robb McDonald, Philadelphia Retrolental Fibroplasia
H Clinton Davis Philadelphia, Management of Intractable Achalasia

At the reception and dinner Tuesday evening Dr John W Cline, San Francisco President of the American Medical Association, will give the address The Woman s Auxiliary to the association will meet Oct 9 10 at the Delaware Academy of Medicine

IDAHO

State Medical Election.—At the annual meeting of the Idaho State Medical Association in Sun Valley June 15-18 Dr Alfred M Popma, Boise, was installed as president Officers elected include Dr Wallace Bond, Twin Falls, vice president, and Dr Robert S McKean, Boise secretary treasurer Dr Hoyt B Woolley, Idaho Falls, was named delegate to the American Medical Association, with Dr Raymond L White Boise, as alternate

ILLINOIS

Society News.—Newly elected officers of the Illinois Society for Medical Research are Drs Anton J Carlson, professor emeritus of physiology at the University of Chicago, president, Dr Andrew C. Ivy, vice president and head of the professional colleges University of Illinois, vice president, N R Brewer, superintendent of animal quarters, University of Chicago, secretary, and Dr Carl C Pfeiffer, head of the department of pharmacology of the University of Illinois, treasurer The society, an affiliate of the National Society for Medical Research, is planning to expand its membership and activities.

Requirements for Municipal Fluoridation of Water.—Requirements to be met by cities prior to receiving Illinois State Department of Public Health approval for addition of tooth decay preventing sodium fluoride to public water supplies have been revised and simplified by the department The new requirements are as follows

1 The municipality must pass an ordinance or resolution indicating the public s decision to fluoridate the public water supply submitting a copy to the Illinois Department of Public Health.

2. Evidence of acceptance and approval of fluoridation by local medical and dental groups must be submitted by a resolution or other document

3 In accordance with the Illinois Department of Public Health s statutory jurisdiction over public water supplies engineering plans and specification for the *installation* of the fluoridation process must be prepared and submitted for review and approval prior to installation

The health department is encouraging addition of fluorides to public water supplies in concentrations not to exceed one to one and one half parts of fluoride to a million parts of water

Chicago

Blatt Memorial Lecture—The third Maurice Lamm Blatt Memorial Fund Lecture will be given by Dr Irvine McQuarrie, professor and head of the department of pediatrics, University of Minnesota, Minneapolis, who will speak on 'Clinical and Experimental Studies on Hypoglycemia ' This lecture, sponsored by the pediatric staff, will be given at 8 30 p m. Oct 2, in the Medical Amphitheatre of Cook County Hospital All interested physicians are invited to attend

Tuberculosis Deaths Reduced Twenty Per Cent.—According to Dr Herman N Bundeson, president of the board of health, tuberculosis deaths in Chicago declined 20 1% in the first six months of 1951 compared with a similar period last year Through June, 1950, there were 603 tuberculosis deaths, and in the same period in 1951, 482 deaths Dr Bundeson credited the decrease to greater public health knowledge Between 1945 and 1950, he said, the city s tuberculosis death rate was cut 41%, reaching a figure of 29 3 per 100 000 persons Chicago plans to step up its campaign against tuberculosis in keeping with the plans of Dr Ernest E. Irons, president of the Chicago Municipal Tuberculosis Sanitarium. For the year ending March 31, the Tuberculosis Institute and the sanitarium jointly conducted a mass x-ray survey of 459,220 persons in Cook County, 9,586 suspected cases of tuberculosis were found.

MARYLAND

General Practice Assembly.—The third assembly of the Maryland Academy of General Practice will be held Oct 4 in the Lord Baltimore Hotel, Baltimore Papers will be read by the following

William G Lennox, Boston Convulsive Disorders
Wallace M. Yater Washington D C. Cardiac Emergencies
Sidney A Portis Chicago Treatment of Liver Diseases
Lloyd F Craver New York The Leukemias and Hodgkins Disease
Robert B Greenblatt Augusta Ga Endocrinology in Gynecology
John C. Krantz Jr Ph.D., Baltimore Use and Abuse of Some of the Newer Drugs.
Lewis K. Ferguson Philadelphia Ambulatory Surgery
Irvine McQuarrie Minneapolis Causes and Therapeutic Management of Spontaneous Hypoglycemia

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Physicians are invited to send to this department items of news of general interest, for example those relating to *society activities new hospitals,* education and public health Programs should be received at least three weeks before the date of meeting

MICHIGAN

Hospital News—St Joseph Hospital and Medical Center, Hancock, was dedicated July 29 The new seven-story 170-bed hospital was erected and equipped at a cost of $2,500,000 It will be operated by the Sisters of St Joseph of Carondelet

State Medical Meeting.—The Michigan State Medical Society will hold its annual meeting at the Pantlind Hotel and Civic Auditorium in Grand Rapids, Sept 26-28 Out-of-state speakers include the following

Reginald H Smithwick Boston Surgical Measures in the Management of Hypertensive Cardiovascular Disease.
Sara M Jordan Boston Peptic Ulcer Complications and Treatment
Ralph A Reis, Chicago Prolonged Labor
Stephen Rothman Chicago Neurodermatitis (Atopic Eczema)
Willis J Potts Chicago Intestinal Obstruction in Infants and Children Due to Congenital Anomalies
Austin I Dodson Richmond Va Indication for Surgery in the Treatment of Nephroptosis
Albert H Aldridge New York Complete Abdominal Hysterectomy
Charles R. Doyle St. Louis Acute Conditions of the Abdomen
Richard V Ebert Minneapolis, Differentiation of Dyspnea Caused by Cardiac Disease from Dyspnea Associated with Pulmonary Emphysema
Henry L. Williams Rochester Minn Physiologic Phenomena Misinterpreted as Rhinologic Disease
S William Becker Chicago The New Versus the Old in the Treatment of Syphilis.
Elmer L. Sevringhaus Nutley N J Vitamin Therapy in Clinical Practice
John Martin Chicago Neurosurgical Methods for the Relief of Pain
Walter P Blount Milwaukee Treatment of the Painful Hip
Waldo E. Nelson Philadelphia Errors in the Therapy of Infectious Diseases in Infants and Children
James W Kernohan Rochester Minn Peripheral Neuritis
Oscar T Clagett, Rochester Minn Mediastinal Lesions
Raymond D Pruitt Rochester Minn Recent Advances in Diagnosis of Heart Disease

At the general public meeting Wednesday evening, Clarence Manion, dean of the College of Law, University of Notre Dame, South Bend, Ind, will deliver the Biddle Lecture on 'The Key to Peace' Twenty two quiz periods will be held in the late afternoon of each day, when questions may be directed to various visiting speakers The Woman's Auxiliary will meet Sept 25-27 On Thursday evening at 10 30 there will be a State Society Night of entertainment with dancing and a floor show at the hotel

NEW JERSEY

Medical Practice Act Violations.—The Board of Medical Examiners of the department of law and public safety, Trenton, has reported the following violations of medical practice during July and August On July 6 Alfred W Steever of Riverside, an unlicensed chiropractor, was tried in the Burlington County District Court on a charge of practicing medicine without a license, and was found guilty He took x-rays, used a neuromicrometer machine for diagnostic purposes, and gave adjustments to various parts of the body On July 9 William H Richmond of Red Bank, a registered pharmacist, paid a penalty for practicing medicine without a license On July 9 Joseph Tuliglowicz of Newark, a naturopath, paid a penalty for practicing medicine without a license He gave adjustments and electric treatments and ordered various remedies This was a sixth offense On July 9 Henry G Garruto of Red Bank, an unlicensed chiropractor, paid a penalty for practicing medicine without a license He took x-rays, blood pressure and adjusted various parts of the body On July 23 George Lezenby Sr, Camden, paid a penalty for practicing medicine without a license He gave electric and manipulative treatments This was a seventh offense On Aug 4 the following persons paid penalties for practicing medicine without a license George B Van Dyke of Trenton, a naturopath who gave manipulative and electric treatments, a third violation, Sara Sussman of Passaic, a physiotherapist, who gave colonic irrigations, sinusoidal wave treatments, and diets for reducing, a second offense, James A Mackey of Trenton an unlicensed chiropractor who adjusted various parts of the body a fourth violation, and Norman O Carver of Neptune City, a naturopath and unlicensed chiropractor, who gave short wave treatments, massage, manipulative treatments and medicine

NEW YORK

Biggs Award—The Hermann M Biggs Memorial Award has been established by the state public health association It will be given annually for "outstanding service in the cause of better health for the people of New York State" The plaque and a certificate may be presented to a public health worker or to any outstanding citizen in the health field The award was established in memory of Dr Biggs, who served as the state's first health commissioner from 1913 to 1923

New York City

Personal.—Dr Leonard J Goldwater, professor of industrial hygiene at the Columbia University School of Public Health, New York, has been recently appointed a member of the World Health Organization expert advisory panel on social and occupational health

Hospital Record Year.—The Hospital Council of Greater New York has reported that hospitals in the city during 1950 provided the largest number of days of general care in the past 15 years 9,669,987 days This represents an increase of more than 1,200,000 days of care since 1944 The figure indicates a trend toward more efficient utilization of available facilities since there has been no major increase in the number of hospital beds

Dr Nelson Heads Department.—Dr Carl T Nelson, assistant clinical professor of dermatology at Columbia University College of Physicians and Surgeons, has been named executive of his department succeeding the late Dr A Benson Cannon Dr Nelson, who joined the university staff and the clinical staff of Vanderbilt Clinic in 1946, had been a member of the bacteriology department of Harvard Medical School, Boston, until he entered the Army medical service during World War II During that time he served as chief of the department of epidemiology and bacteriology for the Fourth Service Command at Fort McPherson, Ga

PENNSYLVANIA

State Heart Association Grants—The Heart Association of Southeastern Pennsylvania has made three grants in-aid A grant of $4,000 was made to St Christopher's Hospital for a study of rheumatic fever among the pupils of the public and parochial schools of Philadelphia, and a similar grant was made to the Children's Hospital of Philadelphia The work at St. Christopher's Hospital will be supervised by Dr Waldo Nelson and Dr Robert Wells, and that at Children's Hospital by Dr Rachel Ash The third grant-in aid was made to Dr Thomas M McMillan and Dr Samuel Bellet at the Philadelphia General Hospital for studies in the recent advances in arteriosclerosis, with particular reference to coronary arteriosclerosis

Philadelphia

Course in Clinical Endocrinology—This course will be given at Philadelphia General Hospital on Wednesday afternoons 4 30 to 6 p m beginning Sept 26 There will be 30 sessions under the direction of Dr William H Perloff A discussion period will be an integral part of each session Participating lecturers, all from the hospital staff, include Dr Perloff and Drs Thomas M Durant, William E Ehrich, Herman W Ostrum, Norman G Schneeberg, and Sholom O Waife, and Harry Hadd, M S

WASHINGTON

Meeting on Obstetrics—The Washington State Obstetrical Association will hold its fall meeting Sept 8 at the Washington Athletic Club in Seattle Dr Eakle W Cartwright, associate clinical professor of obstetrics and gynecology at the University of Southern California School of Medicine, Los Angeles, will speak on 'Bleeding in the Third Trimester of Pregnancy,' and Dr Gilbert J Vosburgh, professor of obstetrics and gynecology at the Western Reserve School of Medicine, Cleveland, will speak on 'Recent Advances in Obstetrics' Dr Albert W Holman, former associate in obstetrics and gynecology at the University of Oregon Medical School, Portland, will serve as moderator at the symposiums following the luncheon and the banquet

State Medical Meeting.—The annual convention of the Washington State Medical Association will be held at the Olympic Hotel, Seattle, Sept 9 12 under the presidency of Dr Kenneth L Partlow, Olympia The program of sports, entertainment and business sessions will begin Sept 8 and will be followed by the general scientific sessions Visiting speakers include Dr Edward D Allen, Chicago, whose subject will be Diagnosis, Treatment and Etiological Factors in Endometriosis and Dr Stewart G Wolff, New York, who will speak on "Practical Aspects of Treatment of Headache" On Tuesday afternoon there will be a symposium on alcoholism with Drs Ted A Loomis, Walter L Voegtlin, and Stephen Fleck, all of Seattle as participants A forum on Fundamental Problems, over which Dr James W Haviland, Seattle, will preside, is to be held Wednesday afternoon The buffet luncheon will take place Wednesday noon with Clem Whitaker and Leone Baxter, public relations consultants of the American Medical Association as speakers The guest speaker at the Tuesday luncheon will be John M McClelland Jr, editor of the Longview Daily News, who will speak on Better Working Relationship Between the Journalism and Medical Professions, in connection with the efforts of the Washington State Medical Association and the Allied Daily Newspapers to develop a code of cooperation

WISCONSIN

State Medical Meeting.—The annual meeting of the State Medical Society of Wisconsin will be held at the Hotel Schroeder and Milwaukee Auditorium Oct 1 3 under the presidency of Dr Henry H Christofferson, Colby The preliminary program lists the following visiting speakers at the general sessions

Franklin D Johnston Ann Arbor Mich Accurate Cardiac Diagnosis
O Spurgeon English Philadelphia A Treatment Plan for Psychosomatic Illness.
George M Lyon Washington D C Medical Aspects of Atomic Exposure
Frank H Bethell Ann Arbor Mich Treatment of Anemia
Edward M Dorr Chicago Obstetrical Anesthesia and Analgesia
George M Guest Cincinnati Salicylate Poisoning
John P Caffey New York Some Recently Recognized Bone Lesions in Children
Carl A Moyer Dallas Texas The Changing Aspect of Gastric Cancer
Everett I Evans Richmond Va Dangers of Delayed Operation in Intestinal Obstruction

On Monday afternoon there will be a symposium on Coronary Heart Disease, the participants being Drs John B Miale, Marshfield Wis, Franklin D Johnson Ann Arbor, Mich Francis F Rosenbaum, Milwaukee, and Joseph W Gale Madison Wis On Tuesday morning there will be a symposium on Carcinoma of the Lung the participants being Drs William A D Anderson, Milwaukee, Lester W Paul Madison Wis, and Oscar T Clagett, Rochester, Minn The dinner speaker on Oct 2 will be Donald J Cowling, Ph D president emeritus of Carleton College Northfield Minn whose subject will be Our American Heritage" There will be daily special teaching programs from 9 to 10 15 a m on fractures obstetric problems, anesthesia, hearing, and x ray interpretations Round table luncheons will be held daily and section programs will be given from 2 30 to 4 30 p m Oct 3

GENERAL

Neurosurgical Society Meeting.—The Neurosurgical Society of America will hold its fourth annual meeting in Sun Valley, Idaho Sept 12-14 Panel discussions make up the program for the first two days and individual papers will be presented Friday morning Discussions and moderators are as follows.

Clinical Pathologic Conference Alfred Uihlein Mayo Clinic Rochester Minn
Hypertension, Charles E Troland Medical College of Virginia Richmond Va
The Therapy of Gliomas Francis J Otenasek Baltimore

Dr Antunes Appointed Assistant Director—Dr Paulo C A Antunes has been appointed assistant director of the Pan American Sanitary Bureau, Regional Office of the World Health Organization, replacing Dr John R Murdock who resigned to return to the U S Public Health Service Dr Antunes has been in charge of the bureau's public health programs for the past three years On May 30, while in São Paulo, Brazil, he was appointed dean of the School of Hygiene and Public Health of the University of São Paulo, Dr Antunes was released by the university, and the assistant dean of the school will carry on during his absence From 1945 to 1947 he was professor of rural health practice and parasitology at the School of Hygiene and Public Health in São Paulo, and he was made director of the São Paulo State department of health in 1947 In 1949 he was released from this position by the Brazilian government in order to accept his post as chief of the Division of Public Health in the Pan American Sanitary Bureau in Washington

Transcriptions of Community Action Series Available—Transcriptions of "All Their Powers," five half hour radio documentaries on community action for better health, are being made available to community groups for rebroadcast The programs were originally broadcast as a public service May 12 to June 9, by the Health Information Foundation and the National Broadcasting Company, coproducers The foundation 420 Lexington Ave, New York 17, makes no charge for use of the recordings but asks that they be returned promptly Community groups wishing to promote use of the programs should first approach the program manager of the local NBC station If he is not interested, or no NBC station exists in the town, the Health Information Foundation will provide information about what local station may be able to use the programs

Association Meeting.—The American Association of Obstetricians, Gynecologists and Abdominal Surgeons held its annual meeting at The Homestead, Hot Springs, Va, Sept 6-8 under the presidency of Dr James K Quigley Rochester, N Y Those speaking by invitation included the following

Robert J Kellar Edinburgh Scotland The Joseph Price Oration Circulation in Pregnancy
Andrew A Marchetti Washington D C Homologous Ovarian and Testicular Tumors
Joseph A Hardy Jr St Louis Mesodermal Mixed Tumors of the Uterus
Allan C Barnes Columbus Ohio Studies in the Cholinesterase Hormone Relationship
Silas H Starr Louisville Prolonged Labor

The speaker at the banquet at 7 30 p m Friday was Dr Alvah S Miller, Wuchang, Hupeh, China

Vermont New Hampshire Joint Annual Meeting.—The joint annual meeting of the New Hampshire and Vermont state medical societies will be held at the Equinox Hotel, Manchester, Vt, Sept 30 through Oct 2 Visiting speakers at the general sessions include the following

John S L. Browne Montreal Canada Basic Considerations in the Use of ACTH and Cortisone
Chester S Keefer Boston Present Day Evaluation of Antibiotics
John F Merrill Boston Hypertension
John Rock Boston Physiology of Conception Its Disorders and Treatment
Ebbe Curtis Hoff Richmond Va The Virginia Program for the Rehabilitation of Addictive Drinkers

There will be section meetings Monday afternoon and a series of special meetings beginning at 4 p m At the banquet at 7 p m Monday the speaker will be Ralph E Flander, Springfield senator from Vermont The woman's auxiliaries will meet in conjunction with the associations

Grants and Fellowships in Cancer Research—The Committee on Growth of the National Research Council acting for the American Cancer Society, is accepting applications for grants and fellowships Applications for new grants will be received until Oct 1 Investigators will be notified individually regarding application for extension of present grants Final decision on applications will be made early in 1952 Grants approved at this time ordinarily will become effective July 1, 1952 Applications for American Cancer Society Fellowships in Cancer Research received prior to Nov 1 will be acted upon by the Committee on Growth in December Those received between Nov 1 and March 1 will be acted upon in April Fellowships ordinarily will begin July 1, though this date may be varied at the request of the applicant Details regarding availability of Damon Runyon Fellowships will be announced later During the past year the *American Cancer Society, Inc, on recommendation of the Committee on Growth* has awarded grants and fellowships approximating 2 million dollars. A program of similar magnitude is contemplated for the coming year Application blanks and additional information may be obtained from the Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Ave, N W, Washington 25, D C

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated

Area	Weeks Ended		
	Aug 25 1951	Aug 18 1951	Aug 26 1950
New England States			
Maine	4	6	1
New Hampshire	8	1	2
Vermont	5	6	3
Massachusetts	21	29	19
Rhode Island	3	1	1
Connecticut	20	10	33
Middle Atlantic States			
New York	109	103	184
New Jersey	82	22	53
Pennsylvania	46	49	77
East North Central States			
Ohio	83	95	86
Indiana	27	29	28
Illinois	90	151	113
Michigan..	85	117	95
Wisconsin	107	84	63
West North Central States			
Minnesota	48	39	27
Iowa	88	57	64
Missouri	65	50	7
North Dakota	7	6	5
South Dakota	4	7	7
Nebraska	32	21	22
Kansas	63	62	83
South Atlantic States			
Delaware			2
Maryland	5	4	33
District of Columbia	14	1	10
Virginia	10	14	67
West Virginia	12	8	35
North Carolina	15	23	65
South Carolina	11	17	27
Georgia	47	42	23
Florida	18	15	9
East South Central States			
Kentucky	31	22	36
Tennessee	80	48	85
Alabama	54	54	15
Mississippi	50	40	23
West South Central States			
Arkansas	80	34	14
Louisiana	30	51	17
Oklahoma	34	48	22
Texas	84	95	113
Mountain States			
Montana..	6	0	0
Idaho	7	5	2
Wyoming	15	4	2
Colorado	114	82	9
New Mexico	14	4	4
Arizona	25	19	6
Utah	53	50	3
Nevada	1	3	2
Pacific States			
Washington	17	16	34
Oregon	11	6	15
California	133	108	80
Territories and Possessions			
Alaska	1		1
Hawaii..			
United States	1 771	1,765	1 618

FOREIGN

Symposium on the Adrenal Cortex.—A symposium on the 'Influence of Hypophysis and the Adrenal Cortex on Biological Reactions,' organized by the Swiss Academy of Medical Sciences, will take place in Zurich, Sept. 30-Oct. 3, immediately after the International Congress of Allergists The speakers will be the following

- Robert S Levine Chicago The Adrenal Cortex as a Regulator in Tissue Reactions
- Burton L. Baker Ph.D, Ann Arbor Mich. Influence of the Adrenal Cortex on Tissue-Reactions to Simple Injuries with Regard to Different Tissue Elements.
- *Thomas F Dougherty* Ph.D Salt Lake City Influence of the Adrenal Cortex on Allergic Reactions (a) Anaphylaxis (b) Eczematous Allergy
- D A Long London, Influence of the Adrenal Cortex on the Allergic Reactions (c) Infectious Allergy
- Gregory Shwartzman New York, Influence of the Adrenal Cortex on the Allergic Reactions (d) Hemorrhagic Reactions
- Matthew Taubenhaus Chicago Synergism and Antagonism of Hormones in the Mechanism of Tissue Reactions

The president of the Swiss Academy of Medical Sciences is Prof. Dr G Miescher, Zurichbergstrasse 43, Zurich 44

European Congress of Hematology.—This congress of the European Society of Hematology will take place in Rome Oct. 3-6 under the patronage of the Hematology Society of Italy Those interested in participating are requested to report to Dr M Torrioli, Via Genova 24, Rome, from whom congress cards are available at a fee of 15 Swiss francs for members, 20 for nonmembers The provisional program lists the following topics and speakers

- Isotopes in Hematological Research and Therapy John H. Lawrence, Berkeley Calif., and J Waldenström Malmo, Sweden
- New Histochemical and Physical Methods of Examination W Laves, Munich, Germany, E *Storti Pavia Italy*· H Luding, Basel Switzerland B Thorell Stockholm, Sweden and N Bessis Paris France
- Reticulosis Reticuloendotheliosis and Reticulosarcomatosis, Ahlström, Lund Sweden, *Van der Meer and Zeldendrust Leiden Holland*, K Rohr Zurich Switzerland and Cazal Montpellier France
- ACTH and Cortisone in Hematology Joseph H *Burchenal New York.*

CORRECTIONS

Author's Address.—In The Journal of Aug 4, 1951 (page 1315), the address of Dr Reginald Everett, author of the clinical note 'Anaphylactic Reactions from Local Use of Penicillin," was omitted Dr Everett's address is 11 Wall St., New York City

Meeting on Gastroenterology.—Dr Cornelius P Rhoads, New York, is one of the speakers at the annual meeting of the National Gastroenterological Association being held in Chicago Sept 17-19, not Dr Charles P Rhoads as was stated in The Journal, Sept. 1, p 69

MEETINGS

Ambulatory Fracture Association Arrowhead Springs Hotel San Bernardino Calif Oct. 8-11 Dr H W Wellmerling 626 Griesheim Bldg Bloomington Ill Secretary

American Academy of Ophthalmology and Otolaryngology Chicago Oct. 14-18 Dr W L. Benedict 100 First Avenue Bldg., Rochester Minn Executive Secretary

American Academy of Pediatrics Toronto Canada Oct. 20-25 Dr E H Christopherson 636 Church St. Evanston Ill. Executive Secretary

American Association for the Surgery of Trauma The Seigniory, *Montebello, Quebec Canada Oct. 23 25 Dr Charles G Johnston*, 1512 St. Antoine St. *Detroit 26 Secretary*

American Association of Blood Banks Hotel Nicollet Minneapolis, Oct 22 24 Miss Marjorie Saunders 3301 Junius St. Dallas 1 Texas, Secretary

American Cancer Society New York Oct. 25 Dr Charles S Cameron, 47 Beaver St New York Medical Director

American Hospital *Association St. Louis, Sept. 17 20 Mr George* Bugbee, 18 E. Division St. Chicago 10 Executive Director

American Medical Writers Association Pere Marquette Hotel *Peoria Ill Sept. 19 Dr Harold Swanberg* 209 W C U Bldg., Quincy Ill., Secretary

American Public Health Association Civic Auditorium San Francisco, Oct. 29-Nov 2. Dr Reginald M. Atwater 1790 Broadway New York 19, Executive Secretary

American Roentgen Ray Society Washington, D C., Sept. 25 28 Dr Barton R. Young Germantown Hospital Philadelphia 44 Secretary

American Society of *Clinical Pathologists Chicago* Oct. 15-20 Dr Clyde G Culbertson 1040 W Michigan St Indianapolis 7 Secretary

American Society of Maxillofacial Surgeons, Drake Hotel Chicago, Sept 23 26. Dr Casper M Epsteen 25 E. Washington St Chicago 2, Secretary

Association of Life Insurance Medical Directors of America New York Oct 11 12. Dr Henry B Kirkland, P O Box 594 Newark 1 N J Secretary

Association of American Medical Colleges French Lick Springs Hotel French Lick Ind. Oct. 29 31 Dr Dean F *Smiley 185 N* Wabash Ave Chicago 1 Secretary

Association of Military Surgeons of the United States Palmer House Chicago Oct. 8 10 Colonel James M *Phalen Armed Forces* Institute of Pathology Washington 25 D C., Secretary

Central Neuropsychiatric Association Hotel Nicollet Minneapolis, Oct 19-20 Dr Lee M Eaton, *102 Second Ave S W Rochester Minn.*, Secretary

Central Society for Clinical Research *Drake Hotel* Chicago Nov 2 3 Dr Kenneth G Kohlstaedt, *960 Locke St. Indianapolis* 7 Secretary

College of American Pathologists Chicago Oct 15-16 Dr Tracy B Mallory Massachusetts General Hospital Boston Secretary

Colorado State Medical Society *Denver Sept.* 18-21 Mr Harvey T Sethman 1612 Tremont Place Denver 2, Executive Secretary

Delaware, Medical Society of Wilmington Oct. 8 10 Dr Andrew H. Gehret 1007 Park *Place, Wilmington* Secretary

District of Columbia Medical Society of the, Hotel Statler Washington Oct. 1 3 Mr Theodore Wiprud 1718 M St. N W, Washington, Secretary

Gulf Coast Clinical Society Edgewater Gulf Hotel Edgewater Park, Miss Oct. 18 19 Dr C D Taylor 113 Davis Ave Pass Christian Miss Secretary

Indiana State Medical Association Indianapolis Oct. 29 31 Miss Lucille Kribs 23 E Ohio St Indianapolis 4 Acting Secretary

Interstate Post Graduate Medical Association of North America. St Louis Oct. 22 26 Dr Tom B Throckmorton Equitable Bldg Des Moines Iowa Secretary

Kansas City Southwest Clinical Society Municipal Auditorium Kansas City Mo Oct. 1-4 Dr Maxwell G Berry 630 Shukert Bldg Kansas City Mo., Director of Clinics.

Kentucky State Medical Association Columbian Auditorium Louisville Oct 2 5 Dr Bruce Underwood 620 S Third St Louisville 2 Secretary

Michigan State Medical Society Grand Rapids Sept. 26-28 Dr L. Fernald Foster 606 Townsend St Lansing 15 Secretary

Midwest Regional Meeting American College of Physicians, Columbus Ohio Oct. 13 Dr B K Wiseman Kinsman Hall *Ohio State University* Columbus 10 Ohio Chairman.

Mississippi Valley Medical Society Peoria Ill Sept. 19-21 Dr Harold Swanberg 510 Maine St. Quincy Ill Secretary

Montana Medical Association Great Falls Sept. 13 16 Mr L. R. Hegland, 104 N Broadway Billings Executive Secretary

Nashville Postgraduate Medical Assembly Maxwell House, Nashville Tenn Oct. 3-5 Dr W G Kennon Jr 647 Doctors Bldg Nashville 3 Secretary

Neurosurgical Society of America Sun Valley Idaho Sept 12 14 Dr C. D Hawkes 22 N Manassas St Memphis 5 Tenn Secretary

Nevada State Medical Association Riverside Hotel Reno Sept. 13 15 Dr Wesley W Hall 307 W Sixth St. Reno Secretary

New Hampshire Medical Society Equinox House Manchester Vermont, Sept. 30-Oct. 2. Dr Deering G Smith 44 Chester St Nashua Secretary

Northeastern Section Southeastern Surgical Congress Lord Baltimore Hotel Baltimore Sept 13 15 Dr W Raymond McKenzie, Medical Arts Bldg Baltimore 1 Secretary

North Texas Southern Oklahoma Fall Clinical Conference Wichita Falls, Texas Sept. 19 Dr W L. Powers 517 Hamilton Bldg., Wichita Falls Chairman.

Oklahoma City Clinical Society Biltmore Hotel Oklahoma City Oct 29 Nov 1 Mrs Muriel R Waller 612 Medical Arts Bldg Oklahoma City Executive Secretary

Omaha Mid West Clinical Society Hotel Paxton Omaha, Oct. 29-Nov 2 Dr L. E Moon 1031 Medical Arts Bldg Omaha 2, Secretary

Oregon State Medical Society Masonic Temple Portland Oct 10-13 Dr Robert F Miller 833 S W Eleventh Ave. Portland 5 Secretary

Pennsylvania Medical Society of the State of Pittsburgh Sept 16-20 Dr Walter F Donaldson 500 Penn Ave Pittsburgh 22 Secretary

Southwestern Medical Association El Paso Texas Oct 18-20 Dr W W Schuessler 1415 First National Bank Bldg., El Paso Texas Secretary

Southwestern Surgical Congress Hotel Jefferson St. Louis, Sept. 24-26 Dr C R. Rountree 1227 Classen St. Oklahoma City 3 Secretary

Texas Academy of General Practice Shamrock Hotel Houston Texas Sept. 10-11 Dr B H Bayer 104 E. 20th St Houston 8 Secretary

U S Chapter International College of Surgeons Palmer House Chicago Sept. 10-14 Dr Arnold S Jackson, 1516 Lake Shore Drive Chicago Executive Secretary

Utah State Medical Association Salt Lake City Sept. 13-15 Dr T C. Weggeland 42 S Fifth East St. Salt Lake City Secretary

Vermont State Medical Society Equinox House Manchester Sept 30-Oct. 2. Dr James P Hammond 542 Main St., Bennington Secretary

Virginia Medical Society of Virginia Beach Oct. 7 10 Mr Richard H Nash 1105 W Franklin St Richmond Executive Secretary

Washington State Medical Association Olympic Hotel Seattle Sept. 9 12 Dr James W Haviland 338 White Henry-Stuart Bldg. Seattle Secretary

Wisconsin State Medical Society of Hotel Schroeder and Milwaukee Auditorium, Milwaukee Oct 1 3 Mr Charles H. Crownhart, 704 E Gorham St. Madison 3 Secretary

Wyoming State Medical Society Rock Springs, Sept 27 29 Dr Glenn W Koford 2020 Carey Ave Cheyenne, Secretary

INTERNATIONAL

Commonwealth and Empire Health and Tuberculosis Conference, Central Hall London England July 8 13 Dr J H Harley Williams Tavistock House North Tavistock Sq London W C.1 England Secretary General

European Congress on Rheumatism Barcelona Spain, Sept. 24-27 Dr Gunnar Edström Lund Sweden, Secretary

General Practitioners Study Club International, Rome, Italy Sept. 12 15 Dr John O Connell 10300 Lackland Road St. Louis 14 Mo., U S A President.

Inter American Congress of Surgery Buenos Aires Argentina, Oct. 1-6

International Association of Allergists Zurich Switzerland Sept. 23 29 Prof A. S Grumbach Hygiene Institut der Universitaet Zurich Gloriastr 32, Zurich Switzerland.

International Congress of Anesthesiology Nursing School of the Salpietre 47 Boul de l Hospital Paris France Sept 20-22. 12 rue de Seine Paris 6 France, Secretariat.

International Congress on Industrial Medicine, Instituto Superior Técnico, Lisbon Portugal Sept. 9-15 Dr Luis Guerreiro Instituto Nacional do Trabalho e Previdência, Praça do Comercio Lisbon, Secretary General.

International Congress on Mental Health Mexico City Mexico Dec. 11 19 Mrs Grace E O'Neill Division of World Affairs National Association on Mental Health 1790 Broadway New York 19 N Y

International Congress of Physical Medicine London, England July 14-19 Dr A C Boyle 45 Lincoln s Inn Fields London W C.2 England Hon Secretary

International Gerontological Congress Hotel Jefferson, St. Louis Mo U S A Sept. 9 14 Dr John E. Kirk, 5600 Arsenal Street St. Louis 9 Mo Chairman Program Committee

International Society of Surgery Paris France Sept 24-29 Dr L. Dejardin 141 rue Belliard, Brussels, Belgium, Secretary General.

International Society for the Welfare of Cripples Fifth World Congress Stockholm Sweden Sept. 9 14 Mr Donald V Wilson 54 E. 64th St New York 21 N Y U S A Executive Director

Pan American Congress of Pediatrics Montevideo Uruguay Dec. 5-8 Dr Maria Luisa Saldien de Rodriguez, Avenida 18 de Julio 1246 Montevideo Uruguay General Secretary

Pan Pacific Surgical Association Congress, Honolulu Hawaii Nov 7 19 Dr Forrest J Pinkerton Suite 7 Young Bldg. Honolulu, Hawaii President.

World Medical Association Stockholm Sweden Sept. 15 21 Dr Louis H Bauer 2 E. 103d St. New York 29 N Y., U S. A Secretary General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology *Oral* Memphis Oct 14-17 Sec., Dr Curtiss B Hickcox 80 Seymour St. Hartford 15 Conn.

American Board of Dermatology and Syphilology *Written* Chicago March 1952. *Oral* Chicago May 1952. Final date for filing application is Feb 1 1952. Sec. Dr George M Lewis 66 E 66th St., New York 21

American Board of Internal Medicine *Written* Various centers Oct. 15 Final date for filing applications was May 1 *Oral.* The schedule of oral examinations for 1951 has been arranged on a regional basis as follows New York Nov 12 15 covering Maine Massachusetts, New Hampshire, New York and Vermont. San Francisco Oct 22 24 covering Arizona California Colorado Idaho Montana Nevada, New Mexico Oregon Utah Washington and Wyoming Final date for filing applications was Sept. 1

Only candidates who have not taken an oral examination can be admitted under the schedule arranged thus far

Oral examinations in the subspecialties will be held at the same time and place and on the same distribution

Exec Sec Dr William A. Werrell 1 W Main St., Madison 3

American Board of Neurological Surgery *Oral.* Chicago Oct. 25-26. *Oral* Chicago May 1952 Final date for filing applications for the May 1952 examination is Jan 1 1952. Sec Dr W J German 789 Howard Ave., New Haven 4 Conn.

American Board of Obstetrics and Gynecology *Written* Feb 1 1952. Final date for filing applications is Nov 1 *Oral* Chicago June 7 13 1952. Final date for filing application is Feb 1 1952. Sec., Dr Robert L. Faulkner 2105 Adelbert Road Cleveland 6

American Board of Ophthalmology *Written.* Twenty five centers Feb 4-5 1952. *Oral* Chicago October 8-13 Sec. Dr Edwin B Dunphy 56 Ivie Road Cape Cottage Maine.

American Board of Orthopaedic Surgery Final date for filing applications for the 1952 Part II examinations is Nov 30 1951 Sec, Dr Harold A. Sofield 122 S Michigan Ave. Chicago 3

American Board of Otolaryngology *Oral* Chicago Oct. 8 12. Sec. Dr Dean M Lierle University Hospital Iowa City

American Board of Pediatrics *Oral.* Buffalo Oct. 26-28 Ex Sec., Dr John McK. Mitchell 6 Cushman Rd. Rosemont, Pa

American Board of Plastic Surgery Denver Oct 27 29 Final date for filing of case reports was Aug 30 Sec. Dr Bradford Cannon Office of the Board 4647 Pershing Ave. St. Louis 8

American Board of Preventive Medicine *Written* San Francisco October 28 *Oral* San Francisco October 29 Sec Dr Ernest L. Stebbins, 615 North Wolfe St. Baltimore 5

American Board of Proctology Philadelphia, Nov 17 18 Sec Dr Louis A. Buie 102-110 Second Ave., S W Rochester Minn

American Board of Psychiatry and Neurology *Oral* New York Dec 17 18 Final date for filing applications was Sept. 1 Act. Sec Dr David A. Boyd Jr 102-110 Second Ave S W Rochester Minn

American Board of Surgery *Written.* Various centers Oct. 1951 Final date for filing applications was July 1. *Written.* Various Centers March 1952. Final date for filing application is Dec. 1 1951 Sec., Dr J Stewart Rodman, 225 S 15th St. Philadelphia.

Board of Thoracic Surgery *Oral* St. Louis Nov 2 Sec Dr. William M. Tuttle 1151 Taylor Ave Detroit 2, Mich

American Board of Urology Chicago Feb 9 13 1952. Final date for filing applications is Sept. 1 Sec., Dr Harry Culver 30 Westwood Rd, Minneapolis 16.

DEATHS

Fallon, John Michael ⊕ Worcester, Mass , born in Worcester, Sept 17, 1901, Harvard Medical School, Boston, 1923, formerly on the faculty of his alma mater, councilor of the Massachusetts Medical Society since 1937 and its representative to the House of Delegates of the American Medical Association in 1946, 1948, and 1950, an Associate Fellow of the American Medical Association, specialist certified by the American Board of Surgery, member of the International Society of Surgery, American Physicians Art Association Medical Library Association, Biological Photographic Association, American Association of the History of Medicine, American Association for the Advancement of Science, New England Obstetrical and Gynecological Society, of which he had been president in 1947-1948, American Society of Anesthesiologists, and New England Surgical Society, fellow of the American College of Surgeons, was a fellow in surgery at the Mayo Foundation in Rochester, Minn , and president of the Alumni Association of the Mayo Foundation, director and surgeon, Fallon Clinic, president of the staff and surgeon at St Vincent Hospital, trustee of the Boston Medical Library and consulting librarian, Worcester Medical Library in 1942 received the honorary degree of doctor of science from Holy Cross College, died in Shrewsbury June 21, aged 49, of coronary insufficiency

O'Shea, John Henry ⊕ Spokane, Wash , Harvard Medical School, Boston, 1905, member of the House of Delegates of the American Medical Association from 1929 through 1947 and member of the Judicial Council from 1933 to 1949, past president of the Washington State Medical Association, member of the North Pacific Surgical Association and the American Association for the Surgery of Trauma, fellow of the American College of Surgeons, member of the founders group of the American Board of Surgery, president of the board of regents of Gonzaga University, served on the staff of Sacred Heart Hospital, where he died July 18, aged 68, of mesenteric thrombosis

Buda, Alfred Marion ⊕ Brooklyn, born in New York, Aug 8, 1896, University and Bellevue Hospital Medical College, New York, 1920, specialist certified by the American Board of Surgery and the American Board of Proctology, member of the American Proctologic Society, fellow of the International College of Surgeons and the American College of Surgeons, clinical instructor in the department of surgery at the Long Island College of Medicine, at various times on the staffs of Bushwick, St Anthony's, Kingston Avenue and St Mary s hospitals, died in Doylestown, Pa , June 4, aged 54, of injuries received in an automobile accident

Imboden, Harry Miles ⊕ New York, born in Lebanon, Pa , Aug 23, 1878, Jefferson Medical College of Philadelphia, 1903, specialist certified by the American Board of Radiology, member of the American Roentgen Ray Society and the American College of Radiology, at one time on the faculty of Cornell University Medical College, consulting roentgenologist, Beekman Downtown Hospital, Knickerbocker Hospital, and the Memorial Center for Cancer and Allied Diseases, all in New York, Mount Vernon (N Y) Hospital, and the Flushing (N Y) Hospital and Dispensary, died in New Rochelle (N Y) Hospital June 13, aged 72, of uremia

Gray, Alfred William, Elm Grove, Wis , born in Milwaukee Sept 26, 1873, Columbia University College of Physicians and Surgeons, New York, 1899, at one time secretary and president of the Medical Society of Milwaukee County, fellow of the American College of Physicians, member of the American Medical Association specialist certified by the American Board of Internal Medicine, served during World War I consultant, Milwaukee Children s Hospital, member of the staff, Columbia Hospital, where he died June 24, aged 77, of uremia and arteriosclerosis

Baer, Samuel W., South Bend, Ind , Illinois Medical College Chicago, 1906, died July 7, aged 88, of cardiac decompensation

Barfield, Joseph Rex, Ocala, Fla , Atlanta College of Physicians and Surgeons, 1913, member of the Medical Association of Georgia and the American Medical Association, died May 1, aged 69, of acute coronary occlusion

Beck, Horace Richard ⊕ Los Angeles, College of Physicians and Surgeons, Los Angeles, 1914, draft examiner during World War I, for many years examiner for the Metropolitan Life Insurance Company, died in Bryce Canyon, Utah, June 23, aged 67, of coronary thrombosis

Bloch, Oscar Edgeworth ⊕ Louisville, Ky , University of Louisville Medical Department, 1893, at one time affiliated with the U S Public Health Service fellow of the American College of Surgeons, served overseas during World War I, formerly on the faculty of his alma mater, for many years on the staff of Jewish Hospital, died June 23, aged 79

Boeck, John, Boise, Idaho, Colorado School of Medicine, Boulder, 1901, member of the American Medical Association, affiliated with St Alphonsus Hospital and St Luke s Hospital, died June 25, aged 89, of pneumonia

Coleman, William Walter, Lincoln, Ill , Missouri Medical College, St Louis 1899 member of the American Medical Association, past president of the Logan County Medical Society, member of the board of directors of Deaconess Hospital, served in France during World War I, died June 28, aged 76, following a cerebral vascular accident

Collins, James, Freehold, N J , Medico Chirurgical College of Philadelphia, 1906, died May 16, aged 73, of coronary thrombosis

Copeland, Henry W., Griffin, Ga , Atlanta College of Physicians and Surgeons, 1901, member of the American Medical Association, died June 4, aged 73, of acute myocardial insufficiency

Cormier, Evariste Alfred, Pawtucket, R. I , Tufts College Medical School, Boston, 1920, member of the American Medical Association, fellow of the American College of Surgeons, chief of staff Notre Dame Hospital, Central Falls, where he died June 23, aged 58, of uremia secondary to heart disease

Darden, James B., Petersburg Va , Meharry Medical College, Nashville, Tenn , 1912, died in Beth Israel Hospital, Newark N J , June 27, aged 70, of hypertensive heart disease

Darlington, Emlen Painter, New Lisbon, N J , University of Pennsylvania Department of Medicine, Philadelphia, 1899 member of the American Medical Association past president of the American Entomological Society, a member of the board of managers of Newcomb Hospital in New Lisbon, honorary member of the medical staff of Burlington County Hospital in Mount Holly, died May 14, aged 77, of cerebral hemorrhage

Davidson, Donald Robert ⊕ Hancock, N Y , Syracuse University College of Medicine, 1917, served during World War I, died in St Luke s Hospital Utica, June 26, aged 59, of subdural hematoma

Davis, Will Charles ⊕ Portland, Ore University of Oregon Medical School, Portland, 1939, specialist certified by the American Board of Dermatology and Syphilology, clinical associate in dermatology and syphilology at his alma mater, formerly fellow in dermatology and syphilology of the Mayo Foundation in Rochester, Minn , affiliated with Good Samaritan Hospital, Physicians and Surgeons Hospital, and St Vincent's Hospital, where he died June 23, aged 38, of renal tuberculosis

Duke, Benjamin Earl, Decatur, Ind , University of Louisville (Ky) School of Medicine, 1925 member of the American Medical Association, affiliated with Adams County Memorial Hospital where he died June 15 aged 50 of cerebral hemorrhage

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⊕ Indicates Fellow of the American Medical Association

Duncan, William Francis ⊕ Aurora, Ind., Miami Medical College, Cincinnati, 1892, an Associate Fellow of the American Medical Association, died in Christ Hospital, Cincinnati, June 29, aged 86, of possible carcinoma of the pancreas

Elliott, Frank B., Blytheville, Ark., Gate City Medical College, Texarkana, Ark. 1905, died June 23, aged 73, of cardiac asthma

Epstein, Hyman Jacob, New York, Long Island College Hospital, Brooklyn, 1906, member of the American Medical Association, served as president of the North Bronx Medical Society and the Bronx County Gynecological and Obstetrical Society, for many years affiliated with Bronx Hospital, died June 30, aged 74

Ferguson, Robert James ⊕ Ashland Ohio, Ohio State University College of Medicine, Columbus 1941, president of the Ashland County Medical Society, served during World War II and received numerous citations, interned at St Francis Hospital in New York and People's Hospital in Akron, formerly a resident at St Francis Hospital in Columbus, died June 14, aged 37, of injuries received in an automobile accident

Field, David, New York, Medizinische Fakultät der Universitat, Wien, Austria, 1929, member of the American Medical Association, affiliated with Morrisania City Hospital died in Lebanon Hospital, May 12, aged 62

Finkelstein, Malvin, Jersey City, N J University of California Medical School, San Francisco, 1942, member of the American Medical Association, specialist certified by the American Board of Pediatrics, served during World War II, affiliated with Fairmount Hospital, Christ Hospital, and Greenville Hospital in Jersey City and the Babies' Hospital in Newark died June 20, aged 33, of acute coronary occlusion

Fischer, John Somerville, Ventnor, N J, Johns Hopkins University School of Medicine, Baltimore, 1903, died June 2, aged 74, of acute coronary occlusion

Fitzhugh, William DeHart, Roanoke, Va., George Washington University School of Medicine, Washington, D C, 1912 died April 11, aged 69, of cirrhosis of the liver

Hansen, George M., Omaha, University of Nebraska College of Medicine, Omaha, 1925, member of the American Medical Association, died April 30, aged 50, of an accidental gunshot wound

Hanson, Lawrence Charles ⊕ Jefferson, Iowa, State University of Iowa College of Medicine, Iowa City, 1932, served during World War II, died in Salt Lake City, June 18, aged 42, of coronary occlusion

Henderson, Robert James, Sunbury, Pa., Jefferson Medical College of Philadelphia, 1892, died April 19, aged 82, of dissecting aneurysm

Higgins, Thomas Alfred, Jersey City, N J, University and Bellevue Hospital Medical College, New York, 1921, member of the American Medical Association, died May 28, aged 52, of acute coronary obstruction and subacute bacterial endocarditis

Hopkins, Arthur Warren, West Swanzey, N H, Dartmouth Medical School, Hanover, N H., 1903, member of the American Medical Association, for many years on the town board of education, died April 30 aged 74, of pulmonary embolism

Johnson, William Throckmorton, Swarthmore, Pa., Medico-Chirurgical College of Philadelphia, 1909, member of the American Medical Association, at one time on the faculty of the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, died April 17, aged 79 of hypertensive heart disease

King, William Eugene, Aynor, S C, Medical College of the State of South Carolina, Charleston, 1914, affiliated with Mullins (S C) Hospital died in Murrell's Inlet, May 27, aged 63, of coronary thrombosis

Klatt, Emil Henry ⊕ Galveston, Texas, University of Texas School of Medicine, Galveston, 1926, assistant professor of dermatology and syphilology at his alma mater, served during World War I, past president of the Galveston County Medical Society, president of the staff of St Mary's Infirmary, served as associate medical director for the American National Insurance Company, died May 28 aged 51 of coronary occlusion

Knowles, Frederick ⊕ Sea Girt, N J, Columbia University College of Physicians and Surgeons, New York, 1900, member of the Medical Society of the State of New York died May 2, aged 76, of cerebral thrombosis

La Belle, Urgele Alexandre, Springfield Mass School of Medicine and Surgery of Montreal, Canada, 1898, died April 22, aged 77, of cardiovascular disease

Ploch, Bernard ⊕ St. Louis, St Louis University School of Medicine, 1924, member of the American Society of Anesthesiologists, on the staff of St Anthony's Hospital died June 2, aged 64, of heart disease

Pollard, Donald W ⊕ Minneapolis, University of Minnesota Medical School, Minneapolis, 1927, served during World War II, for many years superintendent of the Minneapolis General Hospital, where he died June 27, aged 49, of cardiac tamponade and myocardial infarction

Price, Norman Wellington, Niagara Falls N Y, University of Toronto Faculty of Medicine, 1896, member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, affiliated with Mount St Mary's Hospital and the Niagara Falls Memorial Hospital, where he died April 18, aged 82, of myocardial infarction

Runyon, Charles A., Carthage, Ill., College of Physicians and Surgeons, Keokuk, Iowa, 1884, served on the staffs of St Joseph's Hospital in Keokuk, Iowa, and the Memorial Hospital, where he died recently, aged 89, of myocarditis

Rushing, Finis Ewing, Tulsa, Okla., University of Arkansas School of Medicine Little Rock, 1912, member of the American Medical Association affiliated with St John's Hospital, died June 4, aged 63, of coronary thrombosis.

Schwartz, Leon B., New York, Long Island College Hospital, Brooklyn, 1916, member of the American Medical Association, died in Montefiore Hospital for Chronic Diseases, June 10, aged 65, of coronary disease

Sedgwick, Howard M ⊕ Peoria, Ill., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890, died June 9, aged 84, of cerebrovascular thrombosis

Sellew, Robert Cowan ⊕ Canaan, Conn., Yale University School of Medicine, New Haven, 1898, past president of the Litchfield County Medical Society, health officer and medical examiner for North Canaan, died in Fairview Hospital, Great Barrington, Mass., May 30, aged 76

Shaw, Percy Howland, Philadelphia, Medico-Chirurgical College of Philadelphia, 1910, also a graduate in pharmacy, member of the American Medical Association, for many years on the board of education, on the staffs of Chestnut Hill and Germantown hospitals, died June 9, aged 63, of cerebral hemorrhage

Smith, George Wildman, Orange, Calif., Chicago Homeopathic Medical College, 1901 member of the Kansas Medical Society and the American Medical Association, died June 20, aged 77, of carcinoma

Spring, John A., Montrose, Colo., Central Medical College of St Joseph, Mo., 1903, member of the American Medical Association died June 20, aged 74

Spruell, William Hugh ⊕ Russellville, Ala University of Tennessee College of Medicine, Memphis, 1934, member of the Southeastern Surgical Congress, served during World War II, part owner of the Franklin County Hospital, killed June 19, aged 44, when his private plane crashed

Stirling, Warren, Butler, Pa., Medico-Chirurgical College of Philadelphia, 1911, formerly professor of anatomy and histology at Temple University School of Medicine in Philadelphia, served during World War II, affiliated with the Veterans Administration Hospital, died in Civic Hospital, North Bay, Ont., Canada July 8 aged 63, of coronary occlusion

Tigert, Russell, Soda Springs, Idaho College of Physicians and Surgeons, Memphis, Tenn., 1910, member of the American Medical Association, county health officer, on the staff of Caribou County Hospital, where he died June 26, aged 64, of injuries received in an automobile accident

GOVERNMENT SERVICES

ARMY

International Industrial Medical Congress—Official representative of the Army Medical Service at the 10th Annual International Congress of Industrial Medicine to be held in Lisbon, Portugal, Sept 9 15 will be Col Wesley C Cox, commanding officer of the Army environmental health laboratory and consultant to the Surgeon General of the Army on occupational health and hygiene This international assembly of leaders in the field of industrial medicine is private rather than governmental, although public officials and agencies cooperate in its sessions It is estimated that more than 600 scientists will convene from Europe and North and South America, but no requests to attend the meeting have been received from countries within the Communist orbit The congress program includes discussions on social protection of the worker, industrial hygiene, and the pathology of work

Research on Ryukyu Islands—A $100,000 program of scientific investigation in the Ryukyu Islands, designed to rehabilitate the health and economy of the islands, has been started by the Department of the Army in cooperation with the Pacific Science Board of the National Research Council

Nine prominent scientists have been selected to conduct research and to give advice in the fields of public health, food and natural resources, and civil information and education Among them are Dr Robert R Trotter of the Massachusetts Eye and Ear Infirmary, who will work on problems of eye diseases, and Albert V Saleeby of Hopewell, Va, formerly with the Atomic Bomb Casualty Committee in Japan, who will conduct a parasitological survey Plant, animal, and insect surveys will be carried out by other members of the group

NAVY

Aviation Medicine Program.—On Aug 17 the Naval School of Aviation Medicine at Pensacola, Fla, presented to its students, faculty, and guests from the Pensacola Naval Hospital another distinguished speaker, Col Victor A Byrnes, USAF (MC), head of the department of ophthalmology at the Air Force School of Aviation Medicine, Randolph Field, Texas This was a continuation of a program bringing outstanding men in the various clinical specialties to the naval school Colonel Byrnes, who is chairman of the Armed Forces National Research Council Vision Committee spoke on "Ophthalmological Problems Occurring in Major Disasters"

Specialists in Navy Medical Corps.—Since February, 1950, 89 naval medical officers have been certified in various specialties, and 47 have passed part I of their board examinations There are presently on duty 293 Navy medical officers certified by the American Board in the following specialties anesthesia, four, dermatology and syphilology, 11 gastroenterology, one, internal medicine, 32, obstetrics and gynecology, 24, ophthalmology, 25, otolaryngology, 25, pathology, 20, pediatrics, 12, preventive medicine and public health, 16, psychiatry and neurology, 43, radiology, 23, urology, 13, surgery, 30, orthopedic surgery, 10 plastic surgery, one, neurosurgery, one, and thoracic surgery, two

Bio Sciences Group Establishes Clinical Branch—The biological sciences division of the Bio Sciences Group Office of Naval Research, has established a clinical branch headed by Capt J A C Gray, (MC) USN The duties of the Clinical Branch will include liaison with the Bureau of Medicine and Surgery, handling of a more applied program for the Office of Naval Research, and interpretation and application of fundamental research to Navy needs The Bio Sciences Group, which is divided into the biological sciences division and the human resources division, now has 10 branches In the biological sciences division are the physiology, biochemistry, microbiology, biology, dental, and clinical branches In the human resources division are the human relations, psychophysiology, manpower and personnel, and training branches Capt C W Shilling heads the Bio Sciences Group, while Drs Orr E Reynolds and J W MacMillan are directors of the two divisions

Naval School of Aviation Medicine—The research department of the Naval School of Aviation Medicine, NAS, Pensacola, Fla, reports the following changes in personnel

Lt (J G) J L Cannon, MC, USNR, a graduate of the 59th class of the school, has joined the department to assist Capt Ashton Graybiel in cardiovascular research Comdr E G Hurlburt, MC, USN, instructor in dermatology, has been detached for duty as senior medical officer aboard the USS *Leyte* Capt H J Rickard, MC, USN, has reported to the medical department, NAS, Pensacola, to become senior medical officer of the Air Station Capt Rickard formerly served in the same capacity at the NAS in Atlantic City He relieves Comdr M H Goodwin, MC, USN, who reports to the Bureau of Aeronautics in Washington as liaison officer for the Bureau of Medicine Comdr E E Hedblom, MC, USN, senior medical officer at the Naval Air Administration Service, Whiting Field, departs for duty with the Pacific Medical Air Transport Service at Hickam Field, and will be relieved by Comdr C L Rickard, MC, USN, who comes from the USS *Leyte*

Naval Hospital Addition.—A 15 million dollar addition to the Naval Hospital at St. Albans, Queens, N Y, was dedicated Aug 15 The new building, representing the largest single contract for hospitals ever made by the Navy, will accommodate more than 600 patients In the event of an atomic emergency the addition along with the present temporary structures erected in World War II are expected to be able to care for 4,500 patients Rear Adm Lamont Pugh, the Navy's Surgeon General, delivered the dedicatory address at ceremonies attended by high ranking military officers, and congressional, civic, and medical representatives

AIR FORCE

Special Assistant Named to Surgeon General.—Col Jack Buel, USAF (MSC), has become special assistant to the Surgeon General of the Air Force He assumes major administrative duties on behalf of the Office of the Surgeon General Colonel Buel has been deputy for research to the USAF School of Aviation Medicine, research advisor, and chief of the department of psychology He recently was the Air Force representative in the group working on "human behavior under conditions of military service" for the Office of the Secretary of Defense

New Aviation Medical Examiners.—Seventy-one medical officers of the U S Air Force received diplomas Aug 18 at graduation exercises of the School of Aviation Medicine held in the Randolph Field, Texas, officers club Guest speaker was Maj Gen Dan C Ogle, Deputy Surgeon General of the U S Air Force The diplomas, designating each officer as an Aviation Medical Examiner, were presented by Brig Gen Otis O Benson Jr, commandant of the aeromedical school The student officers will not actually acquire the AME rating until they have successfully completed a three months supervised preceptorship in the field During this period each must conduct 50 physical examinations for flying and log 25 hours of flying time in military aircraft. They will then be qualified for duty with Air Force units, where their primary mission will be to conduct physical examinations for flying The preceptorship requirements were added last September when the AME course was shortened from 11 to six weeks due to the urgent need for medical officers in the Air Force. Following completion of their preceptorships, the graduates can qualify for the rating of Flight Surgeon on serv ing an additional year in the field, and on receiving a proper recommendation

The majority of the student officers were first lieutenants, 15 of whom received promotion to captain after entering the school The total group included four regular, one National Guard, and 66 reserve officers This graduation brought to 333 the number of AME graduates at the School of Aviation Medicine since Jan. 1 It was the largest class since World War II

Medical Examiners' Tour —A 10-day postgraduate tour of four of the leading Air Force technical bases was begun Aug 20 by 15 members of the Aviation Medical Examiner class of the School of Aviation Medicine Members of the party were especially selected from among the 71 medical officers who graduated from the AME course Aug 18 All but three of the 15 were rated officers, and their selection was based on this rated experience or continued specialized study in aviation medicine Starting from Randolph Field the group flew first to Elgin Field, Fla, where for two days they observed the giant cold weather hangar and various operational tests Next, they visited Wright-Patterson AFB, Ohio, for a four-day study of facilities and developments of special concern to pilot doctors Proceeding then to the west coast, the group visited Travis AFB to observe all phases of air evacuation, and then went to Edwards AFB at Muroc, where they studied deceleration tests and experimental aircraft. Project officer in charge of the medical group was Capt. Alonzo M Donnell Jr

PUBLIC HEALTH SERVICE

Community Mental Health Program.—The importance of community services to a program to improve mental health is highlighted in the third annual report of the Prince George s County Mental Health Clinic. The clinic was established in 1948 by the Public Health Service as a demonstration of how a mental health program could be planned within the framework of a general local health program Through an exchange of information with other mental health workers the center has gained a considerable fund of information on the methods and types of programs most suitable for different types of communities

Preservation and improvement of mental health in a community, the clinic has found, is basically dependent on the effective utilization of community services for health, welfare, and education before adjustment difficulties become serious Important components in any preventive program are special classes in schools, school testing programs, good foster home programs, careful placement and adoption services, children s protective services, family service agencies, institutional facilities for retarded children, and specialized mental hygiene services

The clinic worked on several special projects during the year with the county department of education and the county health department. One of these was the preparation of a mental health section, including a description of symptoms of pupil maladjustment, in the teachers health manual Another was a study to determine how teachers could recognize problems of adjustment facing the school child A project for the early recognition and alleviation of anxiety producing situations in mothers and children was continued in the prenatal and well baby clinics Another project consisted of a series of seminars to inform the medical personnel of the local telephone company about the relationship of absenteeism and symptoms of maladjustment

Dr Halverson to Head Inter-American Survey.—Appointment of Dr Wilton L. Halverson of California to head a special joint survey to evaluate the health and sanitation programs of 17 Central and South American countries was announced Aug 21 by Dr Leonard A Scheele, Surgeon General of the Public Health Service and Kenneth R. Iverson, president of the Institute of Inter-American Affairs Dr Halverson has been given a six-months leave of absence from his position as director of Public Health of the California state health department to head the survey, which is being carried on under the supervision of the Public Health Service. His appointment to the regular corps of the Public Health Service in the permanent grade of medical director has been approved by the Senate.

The major purpose of the survey is to appraise the influence of the IIAA's nine-year health and sanitation program on the development of local health organizations, the rate at which the programs and methods are being incorporated into the permanent health structure, and the extent to which the health habits of the people are being influenced The survey will be conducted under the direction of Assistant Surgeon General Joseph Mountin, associate director of the Bureau of State Services, Public Health Service, and Dr H van Zile Hyde, director of the health and sanitation division of the Institute of Inter-American Affairs The Public Health Service is staffing and administering the survey with funds allotted by the Institute of Inter American Affairs

A graduate of the College of Medical Evangelists and Yale University, Dr Halverson is a member of the National Advisory Health Council, advisory group to the Surgeon General He is chairman of the American Public Health Association s committee on administrative practice, president of the United States-Mexico Border Health Association, past president of the State and Territorial Health Officers' Association, and a member of the scientific board of the Rockefeller Foundation

Dental Research Program —Whether sodium fluoride taken by pregnant women will provide protection for their offspring against tooth decay will be investigated with the aid of a grant awarded by the Dental Research Institute of the National Institutes of Health This investigation, under the direction of Dr Reuben Feltman of the Passaic General Hospital, Passaic, N J., will attempt to establish whether a fluorine solution administered during pregnancy transfers the fluorine to the fetal bloodstream and whether such transference is beneficial Surveys previously made in South Africa have shown that the baby teeth of children whose mothers had fluorine in drinking water during pregnancy were remarkably free from tooth decay Sodium fluoride (one part to a million parts of water) provides about 65% protection against dental caries for those children who have received it since infancy

Under a grant made to Dr S J Kreshover of the Medical College of Virginia in Richmond, investigation will be made of the effect of prenatal disturbances on the teeth and dental tissues of children Other grants totalling $179,878 will be devoted to the investigation of such problems as the periodental diseases, calcification, malocclusion, and growth changes in the head, face, and teeth during the period of changing dentition

Cancer Morbidity Survey.—The incidence rate of newly diagnosed cancer among residents of New Orleans increased 11% from 1937 to 1947, according to a survey made by the Cancer Institute of the National Institutes of Health at Bethesda, Md The New Orleans survey was carried out in cooperation with the Orleans Parish Medical Society, New Orleans Hospital Council, and the Louisiana State Department of Public Health It is the third in a series of cancer morbidity studies covering 10 representative metropolitan areas in the United States Already published are studies dealing with the Atlanta and the San Francisco areas, both of which also revealed increases in cancer incidence In Atlanta and San Francisco as well as in New Orleans, Public Health cancer authorities attribute some of the increase to improvements in diagnosis, reporting, and case finding.

Remaining surveys will deal with Birmingham, Chicago, Dallas, Denver, Detroit, Philadelphia, and Pittsburgh Comparative data are available for the 10-year period because all the areas were originally surveyed in 1937-1939 When the individual reports are completed, Cancer Institute statisticians will prepare a summary report for the nation as a whole. Copies of the survey may be obtained from the National Cancer Institute, National Institutes of Health, Bethesda 14, Md

Deadline for Research Grant Applications —Dr W H Sabrell Jr, director of the National Institutes of Health, stated that Nov 1, 1951, is the deadline for the first group of Public Health Service grants to be awarded for the 1952-53 fiscal year The grants will be reviewed by the national advisory councils next February Closing date for applications to be considered at the June council meetings is March 1, 1952 Applications for research grants should be addressed to the Division of Research Grants, National Institutes of Health, Bethesda 14, Md

FOREIGN LETTERS

PARIS

Fetal Malformation—The role of infections and vascular disorders in the genesis of fetal malformations and the protection of the mother and fetus were discussed at a recent meeting of the National Academy of Medicine An interesting discussion followed a report by Prof Piédelièvre on therapeutic abortion French law allows the interruption of pregnancy only if the mother's life is imperiled, but the pathologic consequences of a pregnancy for the mother and the possibility of an ill-fated procreation caused the subject to be reconsidered Prof Cathala, who had already mentioned, at the Society for Legal Medicine, the consequences for the fetus of rubella in the mother early in pregnancy, reiterated that certain infections are suspected of giving rise to agenesis, malformation, and sensory disturbances He had seen two cases of microcephalus following acute benign infectious jaundice in the fourth month of pregnancy, but he also saw four women with icterus in the course of their pregnancy who gave birth to normal children Varicella, measles, scarlet fever, and herpes zoster may also provoke abortion or fetal malformation during the first two or three months of pregnancy A commission was appointed for the study of the problem

Seriousness for the Fetus of Unapparent Disease of the Mother—A and P Giroud, M Martinet and R Vargues have endeavored to find the cause of unapparent infections in the mother that are recognized only by serological tests and other laboratory examinations They inoculated rats between the sixth and eleventh day of gestation with Rickettsia prowazeckii, the causative agent of epidemic typhus an unapparent disease in rats and noticeable only by seroagglutination (at 320), and the presence of rickettsias in peritoneal smears The rats were killed on the twenty first day of gestation One day prior to delivery, experiments showed a large number of abortions, or rather resorption of embryos Abortion did not occur in the controls, who had an average of nine fetuses against 3 9 for inoculated animals A cleft palate (similar to that induced by avitaminosis B) was noted in one of the inoculated embryos, the authors thought it due to infection This anomaly has, hitherto, never been observed either as spontaneous or hereditary The authors believe that the high incidence of abortion and growth impairment of the embryos in these experiments indicates that, in women, clinically latent diseases may have serious consequences for the fetus Prof R Debré pointed out that in some quarters it is believed that lesions of embryos may be due to the presence of antibodies developed in the mother

Circulatory Disturbances in the Genesis of Congenital Malformations—P Lombard (Algiers) studied this problem for the first time and concluded that all so-called amniotic malformations result from a cicatricial process, itself evidence of a prior ischemic necrosis Spasm of a large vessel may interfere with the circulation of a limb, resulting in 'amniotic amputation Certain atresias of the colon and small intestines and anorectal malformations may be due to a similar phenomenon Prof Courrier observed similar necrotic phenomena in animals His pupil A Jos of the faculty of sciences, is conducting experimental research on vascular spasm related to the posterior lobe of the pituitary Lombard stresses the necessity of biologic research to determine at what period of intrauterine life these vascular disorders may occur The coincidence of an emotional episode in the mother with a fetal malformation may be explained by a sudden discharge of pituitary and adrenal hormones A systematic study of the mother s hormonal secretions may lead to a means of preventing congenital malformations

Blood Incompatibilities and Mental Retardation—P Desclaux, A Soulairac, and Mlle Morlon resumed the study of rhesus incompatibility on a series of more than 100 retarded persons and extended it to ABO and MN factors Forty-four cases of incompatibility were noted, whereas there were only 23 in a control population Only a small number of incompatible children showed neurologic syndromes

ISRAEL

Problems of Tropical Medicine in Israel—In a lecture delivered before the Jerusalem Branch of the Israel Medical Association, Dr M Yoeli of the Hebrew University Medical School stressed the increasing importance of tropical diseases as a serious menace to the health of the population in Israel In his lecture, "Antibiotics in Tropical Medicine," he gave a historical review of the development of the antibiotics and their place in the treatment and prophylaxis of some endemic and epidemic diseases of the warm climates He showed, with diagrams and charts, that, although antibiotics have revolutionized the treatment of a few tropical diseases, such as typhus, brucellosis, and some spirochetal infections, the bulk of infectious diseases caused by protozoa or worms and most of the small virus infections have not been affected Dr Yoeli suggested a more cautious and critical approach to the evaluation of new chemotherapeutic agents and antibiotics and hoped to see more prolonged observations on the true value of many 'drugs of choice "

Reviewing some research work on antibiotics performed in the department of parasitology of the Hebrew University, by Prof S Adler and his associates, Dr Yoeli gave an account of the excellent results obtained with terramycin in Mediterranean tick-borne relapsing fever

Until the introduction of terramycin no specific drug was available in infections caused by Spirochaeta persica, the causal organism of Mediterranean relapsing fever The disease, which is endemic throughout the Near and Middle East, may produce one to 16 attacks, tends to be severe and neurotropic, and may involve the eye In rats subjected to splenectomy, the curative dose of terramycin, by intraperitoneal injection, was found to be about 40 mg per kilogram of body weight Animals cured during the patent period show no residual brain infection The residual brain infection can be eradicated by 60 mg or more per kilogram of body weight within 50 to 100 days after the termination of the patent infection Cures are achieved by oral medication with doses of 200 mg per kilogram of body weight In five human cases of relapsing fever, eradication of the infection was achieved with oral doses of 3 gm daily for five days

Encouraging results were obtained with terramycin in experimental infections of local leptospirosis The reservoir of the infection is the local Palestine vole, Microtus gunteri The organism was isolated from the vole and from humans and identified as Leptospira geffen (Olejnik and Shneyerson, *Nature* 166 526 [Sept 23] 1950) In a large number of experiments, terramycin showed specific therapeutic and prophylactic action

Textbook descriptions of tropical diseases are at variance with clinical and field observations in epidemiology and vectors in the Mediterranean area (Near and Middle East) In this vast region stretching from Cyprus toward Asiatic Russia, specific epidemiology of many tropical diseases has been observed During World War II, medical officers of the Allied Armies had ample opportunity for study, they ascertained that knowledge gained in London, Amsterdam, and New Orleans differed from the picture they saw in the Near and Middle East.

The mass immigration of Jews from backward eastern countries to a country that has many potential vectors has brought the problem of tropical diseases to the fore The establishment

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The items in these letters are contributed by regular correspondents in the various foreign countries

of a postgraduate school of tropical medicine is of utmost importance The departments of bacteriology and parasitology of the Hebrew University and the different clinical departments of the Hebrew University Medical School have been doing a great deal of research work on the various aspects of tropical medicine within their region Some important contributions on the epidemiology of different insect borne diseases have been made by the Hebrew University Within the Medical Faculty of Jerusalem, there is a strong nucleus of scientists that could form the framework of a school of hygiene and tropical medicine to serve Israel and the whole Near and Middle East

Congress for the History of Medicine and Natural Sciences in Israel.—The second Congress convened in Tel-Aviv in May, 1951, under the chairmanship of Prof Bodenheimer, Jerusalem, and in the presence of many guests from other countries The main speaker was Dr S Munther, who spoke about the Jewish Persian physician Ibn Sinai, known in the literature under the Latin name of Avicenna Ibn Sinai, who greatly influenced medicine of the Middle Ages, was born just a thousand years ago The most important work of Ibn Sinai is the "Canon Avicennae," which is the only great printed medical work of that time, it was published in Naples in 1491 All other medical works of that period were handwritten

Dr J Leibowitsch spoke on the importance of the physician Sacutus Lusitanus, who had translated Dioscorides into Latin He himself was a Maranno of Portuguese descent, who, expelled from his homeland, was converted to Judaism and then practiced medicine at Ragusa

An interesting discourse about popular medicine among the Hassidim (orthodox Jews) was made by Dr Margalit Dr Plaschkes spoke on the importance of Thomas Hodgkin, who was physician to Sir Montefiori Within the course of the congress, the grave of Hodgkin, who died at Jaffa in 1866, was visited The graves of Dr Max Nordau and Dr Saul Czernichowski, two distinguished physicians of the early Zionist era, were also visited

The congress adopted a resolution to publish a quarterly periodical in Hebrew The next International Congress of the History of Medicine, in 1953, may convene in Jerusalem

SPAIN

Congress of the Society of Gerontology—The first Congress of the Spanish Society of Gerontology was held in Barcelona in June, 1950 Dr A Pedro y Pons, professor of internal medicine at the University of Barcelona, presided, and the attendance of over 300 was unexpectedly large for a nation with a relatively small number of medical schools Dr R Navarro Gutierrez (professor at the National School of Phthisiology) and Dr J L. Alvarez Sala (assistant professor in the faculty of medicine), both of Madrid, reported on pulmonary tuberculosis in the aged Some of their conclusions follow

Conditions in the aged that influence the course of tuberculosis include circulatory, renal, and hepatic affections, intermediate metabolic processes, and lowered immunity In the aged, the forms of tuberculosis are, on the whole, similar to those found in other periods of life Greater accuracy in diagnosis as well as wider use of the latest therapeutic resources is desirable In principle, there is no contraindication to the use of modern therapeutics in the aged. It is, however, necessary to judge the indications with extreme care, after first carefully studying all vital systems and organs

The large number of aged patients with the chronic forms of pulmonary tuberculosis raises an important social problem Senile tuberculosis may cause disablement before the compulsory retirement age is reached so that it is extremely desirable that suitable legislation be studied in this connection

Public health bodies must be required to give special attention to the problems of senile tuberculosis, since such chronic forms are generally open and represent one of the greatest sources of danger in the spread of the disease. Special institutions should be set up to study and control tuberculosis in older persons It would also be useful from the viewpoint of geriatric science to have one or more sanitariums exclusively for aged tuberculous patients The Spanish Society of Gerontology should request a seat on the Disabled Persons' Trust and must work to spread knowledge among physicians concerning senile tuberculosis

The second official discussion, led by Prof C Blanco Soler of San José y Santa Adela Hospital, Madrid, dealt with diabetes mellitus in the aged Prof Blanco Soler emphasized the mildness of senile diabetes and the advisability of prescribing rather liberal diets, whenever there are no complications (those prognostically unfavorable for aged diabetics, e g , infections, vascular and renal sclerosis, and hypertension

The third discussion, in which Drs M Pañella Cases (chief of the geriatric department of Nuestra Señora de la Esperanza Hospital, Barcelona) and J Monteys Porta (from the same hospital) were the moderators, dealt with senile osteoporosis Following are some of the conclusions that were drawn Senile osteoporosis is a generalized osteopathy, of a rarefying kind, characterized by the decrease and thinning of the osseous trabecula with widening of the medullary spaces The primary disorder consists of insufficient formation of the protein matrix with persistent reabsorptive phenomena The confusion of terms and concepts that exists in the literature on this subject must be resolved The name osteoporosis has been given to such different processes as osteomalacia and fibrous osteosis This must be avoided, as well as the use of other inaccurate terms, like decalcification, deossification, atrophy, osteolysis, and halisteresis, which have been applied to the process under discussion

The pathological anatomy of senile osteoporosis is in no way different from that found in other osteoporizing processes (Cushing s syndrome, menopause, hypogonadism, and adaptation syndrome) The macroscopic pathological anatomy of senile osteoporosis differs from the above processes only in that the so-called fish vertebras—frequently described as characteristic lesions of osteoporosis in general—are not often found This is probably due to the fact that, in the aged, the intervertebral disc loses its capacity for expansion and thus causes a sinking of both vertebral platforms

Senile osteoporosis is commonest in women Postmenopausal and senile osteoporosis seem to be the same process Senile osteoporosis is an involutive process, but hormonal factors probably influence the time of its appearance and its intensity It does not seem to be related to any disturbance of mineral metabolism or to lack of vitamin D, nor is there any proved connection with any disturbance of protein metabolism Vitamin C, which seems to play a part in the formation of collagenous material, may have some effect on the defective formation of the protein matrix, though lack of vitamin C is not a crucial factor in senile osteoporosis

Senile osteoporosis may be asymptomatic, but its clinical manifestations are usually those of the spinal lesions, i e , kyphosis, rigidness, and rachialgia, and various lesions of the kind wrongly called spontaneous The clinical picture, however, is not characteristic Osteoporosis is painless in itself, but there may be pain from vertebral complications

The diagnosis is still primarily radiological Tests for calcium, phosphorus, and phosphatase levels are not valuable diagnostically, except in the exclusion of other rarifying osteopathies, which cause obvious changes in one or several of these biochemical constants The most important and difficult differential diagnosis is senile osteomalacia

Treatment is uncertain and aimed at relieving pain, correcting deformities, and restoring the bone to normal by promoting trabecular formation Treatment with phosphorus, calcium, and vitamin D does not seem to be sufficiently efficacious As in other types of osteoporosis, treatment with steroid substances proves useless Senile osteoporosis seems to be a nonreversible process, but, in general, the less advanced the course and the more acute the onset, the more it improves with treatment Preparations of amino acids and vitamin C should be given The treatment of the pain is rest and that of the deformity must be orthopedic

The congress opened with a lecture by Prof A Pedro y Pons on senile encephalopathy It closed with a lecture by Prof G Marañon, professor of endocrinology in the University of Madrid, entitled "From Climacteric to Senility"

CORRESPONDENCE

CHANGE IN SIZE OF MEDICINE BOTTLES

The Editor of THE JOURNAL *has been requested by the Council on Pharmacy and Chemistry to publish the following letter and to request the readers of* THE JOURNAL *to inform the Council office of their experiences Such correspondence should be directed to Dr Robert T Stormont, Secretary of the Council on Pharmacy and Chemistry American Medical Association, 535 N Dearborn St , Chicago 10* —ED

To the Editor —During the last few years a tendency has developed for pharmaceutical houses to increase the size of eye, ear, nose, and throat medicine dropper bottles from ¼ oz. to ½ oz. and 1 oz This tendency, in my opinion, not only is a hazard to health but also results in increased cost

Treatment for most eye, ear, or nose diseases requires only ¼ oz. (6 to 7 cc) of medication If that amount does not cause considerable improvement, the treatment should be changed I prescribe only such small amounts, but too many may use 1 oz. size bottles At least ¾ oz of the prescribed medicine will be left over, to be used again or to be distributed to friends in the neighborhood for similar conditions, constituting a health hazard I saw a patient for whom a practitioner prescribed sulfonamide solution for acute conjunctivitis which cleared up in two or three days One of the patient's friends had an acute attack of glaucoma four months later This woman used the sulfonamide for four days, until the pains became intolerable Had the first patient not had such a large amount of these drops to go to waste, the second patient might have come to the doctor for proper treatment without losing any valuable time

There is also the possibility that an infection may be carried from one patient to another by the use of the same dropper and bottle This applies not only to eye diseases but to ear and nose diseases as well

I would like to call the fact of the increase of the size of the original bottles to the attention of the Council of Pharmacy and Chemistry It might be worth while to give this some serious consideration and advise the pharmaceutical houses to bottle the medication in ¼ oz containers

GEORGE R LAUB, M D ,
1627 Bull St , Columbia 1, S C

ALKALOSIS AND HYPERVENTILATION

To the Editor —In the July 21, 1951, edition of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, page 1125, in the article on "Alkalosis Due to Hyperventilation the authors, Sattler, Marquardt, and Cummins, state, "A review of the literature reveals no clinical reports of hyperventilation alkalosis " In the April 22, 1922 (page 1193) edition of THE JOURNAL, I described several cases of hyperventilation alkalosis in an article entitled Clinical Tetany by Forced Respiration In the June, 1920, edition of the *American Journal of Physiology*, Grant and I first described the production of tetany by voluntary hyperventilation

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DIAPHRAGMATIC FLUTTER

To the Editor —I wish to comment on the patient with diaphragmatic flutter described by Dr Wallie L Craddock in the August 4 issue of THE JOURNAL, page 1315 To add to his list of hospitalizations, he was in the Massillon Ohio, State Hospital in the latter half of 1947 or early half of 1948, and known as John Allen He had been committed following disturbed behavior while under observation for a ' heart attack in a Warren, Ohio, hospital He claimed to be a retired merchant seaman, and he was quite interested in flowers and working in the greenhouse The spring of this year he was in Chicago State Hospital

I would like to raise the question of whether his attacks are a matter of malingering as some physicians are inclined to assume My conjecture is that they represent hysteria and that the flutter is a diaphragmatic equivalent of a hysterical convulsion They are precipitated by emotional crises, and the resulting hospitalizations may be considered as "secondary gain " The "various theatricals' and belligerency in temper tantrum like episodes suggest a hysteroid personality It is unlikely that the diaphragm can be moved as rapidly as 200 times a minute under the direct control of will, as would be the case in malingering Personality studies, such as the Rorschach test, might throw considerable light on this case

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VASOPRESSIN INJECTION (PITRESSIN®) AND THE INTESTINAL TRACT

To the Editor —The reason for the experience of Drs Slotnik and Teigland (Cardiac Accidents Following Vasopressin Injection [Pitressin®], *J A M A* 146 1126 [July 21] 1951) can be sought in the fact that 20 units of pitressin® were injected We regard it as a better policy to follow the advice of Goodman and Gilman, who in their textbook ' The Pharmacological Basis of Therapeutics" recommend doses of 5 to 10 units to achieve the desired effect on the intestines

The danger of excessive doses of this substance lies not only in the possibility of creating disturbances of the coronary circulation I saw Cheyne Stokes respiration after administration of a postpituitary extract, and I witnessed the reaction of an infant who received 5 units A prolonged period of apnea with deep cyanosis and unconsciousness left a lasting impression which one would not wish to invite again

If a dose of pitressin® greater than 10 units is necessary for expelling gas from the intestines before cholecystography, the use of the drug in this diagnostic procedure should be abandoned The kidney function test using postpituitary extracts which I introduced in 1921 has since been performed by many investigators without untoward side effects This latter test, however, can be satisfactorily performed with 10 units or less (Pasqualini, R Q Tubular Resorption Test With Results Obtained in 19 Cases of Acute Nephritis, *J Lab & Clin Med* 30 51 [Jan] 1945)

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PLASMA L E. TEST IN LUPUS ERYTHEMATOSUS

To the Editor —In the editorial entitled "Plasma L. E Test in Lupus Erythematosus" (*J A M A* 146 819 [June 30] 1951) it is stated that Hargraves 'conceived the idea" of the plasma L E test and that ' Haserick made the same observation one year later While not wishing to detract from Dr Hargraves' splendid contribution in this field, I would like to point out that the editorial omitted the following two articles by Haserick and Bortz which were prepared prior to the appearance of Dr Hargraves paper on April 27, 1949 (*Proc Staff Meet Mayo Clin* 24 234, 1949) (1) Normal Bone Marrow Inclusion Phenomenon Induced by Lupus Erythematosus Plasma" (*J Invest Dermat* 13 47, 1949) submitted for publication March 25, 1949, and (2) "New Diagnostic Test for Acute Disseminated Lupus Erythematosus" (*Cleveland Clin Quart* 16 158, 1949) submitted to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION on April 20, 1949

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Compensation of Physicians Divorced Husband's Liability for Services to Child.—The plaintiff dentist sued to recover a sum of money alleged to be the reasonable value of dental services rendered to the defendant s minor child at the request of the child s mother, who is defendant's divorced wife and to whom custody of the child had been awarded by virtue of the divorce decree From a judgment in the trial court in favor of the plaintiff, the defendant appealed to the St Louis court of appeals, Missouri

The child was born with a harelip and cleft palate which required surgical care and prior to the divorce the parents entered into a separation agreement by the terms of which the defendant agreed, among other things, to pay all the costs and expenses of any additional operation or operations that might be necessary on account of the child s deformity and to pay the sum of $15 a month for the child's maintenance The divorce decree also fixed the defendant's obligation for the child s maintenance at $15 a month

The plaintiff specializes in dental work for children, and the child in question was referred to her by the surgeon who had performed the operation to repair the harelip condition Thirteen cavities were filled and an abscessed tooth treated and the trial court found that the work the plaintiff did was necessary and her charges reasonable The defendant did not know the plaintiff and had had no communication with her respecting the work she did for his son In fact, the first information he had regarding plaintiff's connection with the case was when he received a bill for her services in January, 1949, almost a year after the services were rendered

The defendant argued that the decree of the divorce court requiring him to make monthly payments for the maintenance of the child was conclusive upon the extent of his obligation for the child s support until such time as the decree might be modified, and that the whole theory and purpose of a fixed award would be defeated if either the mother or a volunteer should be permitted to impose a liability upon him other than that imposed by the decree If this action had been brought by the child's mother to recover for money she had personally expended in obtaining dental services for the child, said the court, it might well be argued that in such controversy between her and defendant, the provision made by the court's decree should be regarded as having fixed the measure of the defendant s liability to her for the child s maintenance, and that if the payments required by the decree were inadequate, her remedy, before making any expenditure, would have been to apply to the court for a modification of the decree upon the showing of a change in the child's condition which had made it necessary that dental services be procured However, this action is by the dentist rendering the services She is not a party to the decree and is therefore in no sense concluded by it Neither is plaintiff entitled to any possible benefit to be derived from the terms of the separation agreement, which was purely a contract between the parents of the child

If the plaintiff is to recover in this action, said the court, it must be solely on the strength of defendant's common law liability A father's liability to a third person for necessaries furnished his minor child is not affected by the fact that the custody of the child has been awarded to the mother His liability is founded upon the theory of authorization, and in the absence of an express promise to pay, there must be a showing of circumstances from which a promise may be implied Except for an emergency which renders a third person s immediate interference both reasonable and proper, an implied promise to pay for necessaries must depend upon the father's failure or refusal to supply them, and where he is ready and willing to make suitable provision for his child there can be no recovery by a third person who has furnished the necessaries without his express authority In other words, the basis of the father's liability is his omission to fulfill his obligation of supporting his child, and a stranger who furnishes articles or renders services to the child does so at the peril of being able to show that they were furnished under such circumstances as to have imposed a duty on the father to pay for them Consequently the volunteer who undertakes to recover from the father has the burden of establishing not only that the articles furnished or the services rendered were in fact necessary, but also that the father had been guilty of a manifest dereliction in failing to supply them Here any such evidence is entirely lacking, said the court While it would doubtless not be contended that the services which plaintiff rendered did not fall within the category of necessaries, there is nothing to indicate that the child s need for such services had ever been brought to the defendant's attention, or that he had been given any opportunity whatsoever to see that proper provision be made, as, for instance, by the selection of a competent dentist of his own choosing in his own locality Instead it was an admitted fact that the first information he had of the matter was when he received the bill from the plaintiff long after the services had been performed Under such circumsances there was a failure of proof upon the fundamental ground of liability

Accordingly the judgment of the trial court in favor of the plaintiff dentist was reversed —*Thompson v Perr 238 S W (2d) 22 (Missouri 1951)*

Malpractice Failure to Diagnose Fracture.—The plaintiff filed suit against the defendant physicians for damages for alleged malpractice resulting in injury to her leg From a directed verdict in favor of the defendants and a judgment overruling the plaintiff's motion for a new trial, the plaintiff appealed to the court of appeals of Georgia, division number 2

The plaintiff fell down while at work in the apartment hotel in which she lived One of the defendant physicians diagnosed her injury as a strained muscle, put her to bed and gave her capsules to relieve her pain The pain persisted about two weeks, however, and at that time she was x rayed and found to have suffered an impacted fracture of the left leg She was then placed in a cast which she wore for some time The end result was that the plaintiff suffered an absorption of the neck of the femur, resulting in a fibrous union at the site of the fracture and a definite shortening of the left leg The plaintiff contended that this result was caused by the defendants in improperly diagnosing her condition and in failing to take x rays

The counsel for the plaintiff contended that there was both lay and medical testimony as to the negligence of the defendants The record, said the court, does not bear out this contention The testimony of the medical witness for the plaintiff indicated that the result of the defendants treatment of the plaintiff was that which obtained in about 20% of similar cases and that medical science does not yet know how to prevent such results This was a question solely for expert medical evidence A layman may testify as to results, but not as to whether treatment given in a particular case constitutes a failure on the part of physicians to use care and diligence Since the results suffered by the plaintiff was the same as that which is obtained in 20% of all such cases regardless of any negligence on the part of the physician, the court was of the opinion that the trial court was correct in directing a verdict in favor of the defendants unless some of its special rulings relating to admissibility of evidence were wrong

The plaintiff contended that the trial court erred in sustaining an objection by counsel for the defendants to questions propounded by the counsel for the plaintiff to the plaintiff's medical witness as to whether in his opinion it was advisable for a surgeon treating a fracture of the hip to wait two weeks before taking an x ray We think the objection was correctly sustained The issue was whether the treatment given the plaintiff by the defendants measured up to the standards of care and skill ordinarily employed by the profession generally under similar conditions and like surrounding circumstances It was not a question of what one individual doctor thought was advisable

Accordingly the judgment of the trial court directing a verdict in favor of the defendant physicians was affirmed —*Mayo v McClung, 64 S.E (2d) 330 (Georgia, 1951)*

Medical Practice Acts· Limitations on License Revocation — The Connecticut Medical Examining Board, after a hearing on complaint of the State Commissioner of Health, revoked the plaintiff's license to practice medicine From a judgment of the trial court in favor of the plaintiff, an appeal was taken to the Supreme Court of Errors of Connecticut

The plaintiff's basic claim is that the recommendation of the medical examining board revoking his license was illegal because the board exceeded its authority The statute in effect when the commissioner of health filed his complaint listed as grounds for the revocation of license, among other things, immoral, fraudulent, dishonorable or unprofessional conduct and illegal incompetent or habitually negligent conduct in the practice of the healing arts This enactment, said the court, was at once a grant and a limitation of power The board was authorized to act upon any one of the enumerated grounds, but it was limited, by the failure or refusal of the legislature to add others, to those specified

In the present case the plaintiff was subjected to a hybrid accusation He was charged, in part, with "wanton negligence' in the practice of his profession This charge, said the court, finds no sanction whatsoever in the statute Whether wisely or not, the legislature has made but one form of negligence a ground for revocation This is negligence which is characterized as habitual All other forms, whether they are described as wanton, gross, heedless or reckless, are excluded from the statute by implication The board was as unwarranted in finding the plaintiff guilty of wanton negligence as was the commissioner in making the charge

The charge of wanton negligence was not set forth independently but was linked with one alleging 'fraudulent, dishonorable, unprofessional and immoral conduct ' Five counts were involved The board found the subordinate facts as to each and then reached the following conclusions (1) The plaintiff was "guilty of having treated Mrs Everett Brady in a ruthless and wantonly negligent manner", (2) he was "guilty of negligence in his care and treatment of Mrs Everett Brady and her infant son", (3) he was ' guilty of treating James Nally in a careless and negligent manner and to his detriment", (4) he was ' guilty of treating Mrs Arthur Gordon in a cruel, and grossly negligent manner and to her detriment", and (5) he was "guilty of rendering careless and improper medical treatments to Mrs Everett Brady and her infant son ' The significance of this recital, said the Court of Errors, lies not in what it contains but rather in what it omits No reference is made to unprofessional conduct This omission acquires added significance from the board s statement, incorporated in its finding, that in arriving at a decision it considered ' each count and allegation separately and independent of all other counts and allegations " If this statement is accepted, continued the court, as it should be it follows that the board was unable to conclude that the plaintiff was guilty of unprofessional conduct on any one of the counts, when considered separately Nevertheless, at the very end of its finding, the board records that its members ' are in unanimous agreement that the Respondent is guilty of dishonorable and unprofessional conduct " This conclusion must, then, have been reached through the cumulative effect of the findings on all the counts Therein lies the impropriety of the board's action, said the Court of Errors As we have pointed out, the findings of guilt based on negligence, characterized as gross, wanton or otherwise, were unlawful In using them to reach a conclusion of guilt on the charge of unprofessional conduct, the board acted illegally

A complaint by the department of health need not be phrased with the precision of a well-drafted pleading It must, however, be based on the statute Nor need a hearing before the board be marked with the formality with which a judicial trial is conducted It is sufficient if he who is under charges has a reasonable opportunity to hear and be heard on them and if the proceedings are conducted in a fair and impartial manner The informalities to which we refer in this case, however, must not be permitted to prejudice the rights of parties

Accordingly the judgment of the trial court disapproving the order of revocation made by the board of medical examiners was affirmed —*Adam v Connecticut Medical Examining Board, 79 A (2d) 350 (Connecticut, 1951)*

MEDICAL MOTION PICTURES

Laboratory Diagnosis of Diphtheria. Parts I II III IV 16 mm. black and white sound Produced in 1950 by and procurable on loan from Communicable Disease Center 50 Seventh St N E Atlanta 5 and on purchase from United World Films 1445 Park Ave New York 29

Part I *Microscopic Study and Isolation of C Diphtheriae* Showing time 13 min This film deals with the laboratory diagnosis made on the basis of a culture of throat and nasal secretions The techniques of obtaining the material, making smears and cultures, and selection of the culture medium are brought out clearly and systematically The film shows how the laboratory procedure can be only an aid to the physician, because with the most modern technique the information can be furnished in 18 hours at the earliest. In most instances the diagnosis must be made on the basis of what is found by physical examination If the physician delays treatment 18 hours, the patient may benefit little The physician may modify treatment after the report of the culture comes from the laboratory

Part II. *Determination of Types of C Diphtheriae* Showing time 12 min This film shows how the three main types of the diphtheria bacillus are identified This is of considerable epidemiologic importance The value of the macroscopic appearance of the colony is illustrated convincingly, the gross diagnosis of the colony, the hemolysin test, and the fermentation tests complete the identification of the type

Part III *Testing for Virulence in Animals* Showing time 13 min This film deals with the virulence test, performed preferably on rabbits Here again, the procedure is brought out clearly A good example of how rabbits should be handled is shown Laboratory technicians could profit from this particular phase of the film The occasional use of guinea pigs and of chicks is also illustrated

Part IV *The In Vitro Virulence Test for C Diphtheriae* Showing time 12 min This film presents in great detail the in vitro virulence test

These four films give all that one needs to know about the techniques of the laboratory diagnosis of diphtheria, of the typing of the diphtheria bacillus, and of the various virulence tests. The films will be of primary interest to bacteriologists, laboratory technicians, and medical students They will also be of interest to physicians and nurses as a part of their general education The physicians will profit by finding out the limitations of the laboratory diagnosis of diphtheria Many pages of printed material and/or lectures could not possibly furnish the same amount of information as convincingly as this series The photography and narration are excellent, and the films are very well organized

Chick Embryo Techniques: 16 mm. black and white sound showing time 15 min Demonstrated by G John Buddingh M D Louisiana State University School of Medicine Produced in 1951 by and procurable on loan from Communicable Disease Center 50 Seventh St N E. Atlanta 5 or on purchase from United World Films 1445 Park Ave New York 29

The chick embryo is a very useful medium for culturing It is highly specialized and has no rival in its specific field of usefulness This film gives the complete technic of the procedure all details are presented clearly The physician and medical student will get a convincing demonstration in the shortest possible time It can be recommended without reservations as meeting all the requirements of teaching a specialized procedure It will be of interest to technicians, research investigators, and physicians in general and can be used advantageously in bacteriology courses The photography and narration are excellent

SOURCES OF MOTION PICTURES ON HEALTH

A revised list of "Sources of Motion Pictures on Health" has been prepared by the Committee on Medical Motion pictures This new mimeographed list includes nine pages of addresses of the major loan and rental libraries, the state health departments film libraries, and references to printed lists and catalogs. Copies are available from the Committee on Medical Motion Pictures, American Medical Association, 535 N Dearborn St, Chicago 10

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A M A Arch Dermat and Syphilol , Chicago

63 675-810 (June) 1951

*Progesterone Therapy in Dermatoses of Pregnancy (Herpes Gestationis) C. Keaty P E Jones and J H Lamb —p 675

*Antibiotics in Early Syphilis and in Syphilis Complicated by Pregnancy H M Robinson and H M Robinson Jr —p 687

Plasma Proteins in Various Diseases of Skin Electrophoretic Studies W F Lever E L Schultz and N A Hurley —p 702

Treatment of Chronic Cutaneous Problems with Calciferol L. C Goldberg and H L. T Dexter —p 729

Lichen Simplex Chronicus (Vidal) Treated Successfully with Podophyllin J Garb —p 740

Use of Mineral Oil in Maintenance of Cultures of Fungi Pathogenic for Humans L Ajello V Q Grant and M A Gutzke —p 747

Effect of Roentgen Rays on Microsporum Canis An in Vitro Study K Loewenthal —p 750

Vitamin A Deficiency with Cutaneous Conjunctival (Bitot Spots) and Renal Manifestations Report of Case W L Marmelzat —p 759

Necrobiosis Lipoidica Diabeticorum Its Surgical Treatment E P Cawley and R. O Dingman —p 764

Progesterone in Dermatoses of Pregnancy.—Ten women between 21 and 40 with polymorphic eruptions during pregnancy were studied The onset of the dermatosis was during the first trimester of pregnancy in two patients during late pregnancy in seven and 24 hours post partum in one There had been a total of 20 previous pregnancies among these patients, yielding 14 living children (a fetal mortality rate of 30%) One delivery was premature Four of the 10 patients had experienced the dermatosis with previous pregnancies During the pregnancy under consideration five of the 10 patients had moderate to severe edema and four had albuminuria Persistent headache, red blood cells in the urine, and hypertension were observed in three patients The level of blood chorionic gonadotropin in seven patients was abnormally elevated during late pregnancy, averaging 3,125 rat units per 100 ml of blood as compared to the normal level of 500 to 750 rat units per 100 ml Since the demonstration of excess chorionic gonadotropin in later stages of pregnancy has previously been shown to be associated with decreased production or aberrant metabolism of progesterone, substitutional treatment with progesterone (proluton®) in doses of 25 to 50 mg daily was practiced Remission of the skin lesions resulted in all 10 patients All 10 pregnancies resulted in living normal infants There was one instance of premature delivery at eight months with fetal survival The observation of elevated chorionic gonadotropin titers in late pregnancy and the response to treatment with progesterone are suggestive of progesterone deficiency in patients with dermatoses during pregnancy

Antibiotics in Early Syphilis.—Of 166 patients with early syphilis 127 were treated with penicillin 14 with chloramphenicol (chloromycetin®), 20 with aureomycin and five with terramycin Of the 127 patients treated with penicillin 56 had dark field positive lesions of early syphilis and 71 had early syphilis complicated by pregnancy Ten different schedules of treatment with penicillin were used Of 43 patients who were scheduled to be treated once weekly for 35 weeks with intramuscularly administered penicillin only eight completed the course Of 13 out patients treated with buffered penicillin tablets daily for 15 days only two completed the required amount of treatment, and neither of these achieved a satisfactory result Carinamide administered concurrently to 27 patients receiving penicillin orally or intramuscularly did not enhance the value of the penicillin Of the 56 patients with uncomplicated early syphilis, 14 had negative results of blood and spinal fluid examination six months after completion of penicillin treatment Of the 71 patients with early syphilis complicated by pregnancy who were treated with penicillin, 62 gave birth to normal infants and nine to infants with congenital syphilis The mothers syphilis was improved in 22 instances and there was no change in 49 Of the 14 patients treated with chloramphenicol the dark field observations became negative in eight within 24 hours and in the rest in 48 to 72 hours Ten of these patients completed the preliminary six months follow up period, and seven of them became seronegative and had negative results on spinal fluid examinations Two pregnant women with early syphilis treated with chloramphenicol were delivered of nonsyphilitic infants Of the 20 patients treated with aureomycin 10 received the drug by mouth and 10 by intravenous route With the oral treatment the dark field observations became negative in 18 to 72 hours The lesions healed in seven to 12 days in all 10 Three of the patients completed the preliminary six months observation period and became seronegative and had negative spinal fluid reactions Of the 10 patients treated intravenously, eight completed the preliminary six months follow-up period three of these became seronegative and had negative results of spinal fluid examination three showed a decided drop in the serologic titer and two were lost sight of The lesions in this group healed in seven to 14 days Further studies must be done to determine an optimum dose The five patients treated with terramycin had negative dark field observations 24 to 32 hours after the institution of treatment The lesions healed in from seven to 12 days

A M A Arch Surgery, Chicago

62 737 902 (June) 1951

Laboratory Aids in Surgery with Special Reference to Potassium Deficiency W H Cole —p 737

Experimental Bronchotracheal Anastomosis R P Meyer R W Ehrlich C B Taylor and others —p 753

Arterial Homografts III Use of Preserved Grafts in Treatment of Neoplastic Disease Involving Peripheral Arteries H Swan and H M Morfit —p 767

*Surgical Treatment of Pulmonary Stenosis with Intact Interventricular Septum W J Potts and W L Riker —p 776

Attempts at Experimental Production of Portal Hypertension T C Douglass W H Mehn B F Lounsbury and others —p 785

Portal Hypertension Use of Venous Grafts When Side to Side Anastomosis Is Impossible J T Reynolds and H W Southwick —p 789

Effect of Portacaval Venous Shunt on Sulfobromophthalein (Bromsulphalein®) Retention D E Preshaw A Large and A F Johnson —p 801

Effect of Occlusion of Arterial Blood Supply to Normal Liver Experimental Study J H Grindlay F C Mann and J L. Bollman —p 806

Open Versus Closed Method of Colon Anastomosis C F Kittle T G Orr Jr and T G Orr —p 812

Familial Polyposis of Colon W S Dye G A Olander C W Monroe and J H Olwin —p 823

*Surgical Treatment of Familial Polyposis F E Walton —p 833

Prognosis of Gastric Carcinoma Effect of Extent of Resection W D Thomas J M Waugh and M B Dockerty —p 847

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Use of Tantalum Mesh in Hernia Repair C C Guy and C Y Werelius —p 867

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Separations of Abdominal Wounds C W Mayo and M J Lee Jr —p 883

Effects of Soaps Containing Hexachlorophene on Wounds and Burned Surfaces R R Best J D Coe and G B McMurtrey —p 895

Surgical Treatment of Pulmonary Stenosis—Stenosis of the pulmonary valve is the only important abnormality in some patients with cyanosis due to congenital heart disease This abnormality sometimes called pure pulmonary stenosis, differs from that seen in typical tetralogy of Fallot in that the interventricular septum is intact and consequently there can be no overriding of the aorta Stenosis is caused by fusion of the cusps of the pulmonary valve Dilatation of the pulmonary artery is usually found immediately distal to the stenosis The only other

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The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of five days Three journals may be borrowed at a time Periodicals are available from 1940 to date Requests for issues of earlier date cannot be filled Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested) Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order Reprints as a rule are the property of authors and can be obtained for permanent possession only from them

An asterisk ( ) before a title indicates that the article is abstracted lesion often seen in these hearts is a patent foramen ovale, which serves as an escape valve into the left auricle for blood dammed back in the right auricle The size of this shunt determines the degree of cyanosis There may be dyspnea and decrease of exercise tolerance with relatively little cyanosis The heart is enlarged There is usually a systolic murmur Whereas in the tetralogy of Fallot satisfactory results are obtained by shunt operations between the subclavian and the pulmonary artery or the aorta and the pulmonary artery, the most satisfactory operation for the stenotic pulmonary valve is transventricular valvulotomy The valvulotome used by the authors consists of a small cataract blade on a rounded shaft attached to an ordinary knife handle The rounded shaft was made of such size that it would fill the opening in the wall of the right ventricle and thus prevent loss of blood Although this valvulotome proved successful in four patients, it was feared that it might fail to relieve the obstruction in older patients with more rigid valvular stenosis The principles of the expanding blade used by urologists and of the adjustable esophageal dilator used by endoscopists were drawn on in devising an expanding valvulotome and dilator The valvulotome is so constructed that the blades can be retracted by means of a turn screw while the instrument is being thrust through the wall of the ventricle An important feature is the gage that indicates exactly how widely the blades of the knife are being expanded while in the chamber of the right ventricle preparatory to the thrust through the stenotic valve The shaft of the dilator is the same caliber as that of the valvulotome and is introduced through the same hole in the right ventricle after the valvulotome has been withdrawn Because reduction of temperature lessens the consumption of oxygen during the operation and thereby reduces the danger of disastrous anoxia, the patient is placed on a water mattress through which ice water is circulated The authors performed valvulotomy in 13 patients, one of whom died In the other 12 patients, the results have been excellent in 11 and fair in one

Surgical Treatment of Familial Polyposis.—Malignant degeneration may be expected in familial polyposis of the colon, if it is allowed to progress untreated The symptoms and signs of this disease include bowel irregularity, diarrhea, the presence of mucus and blood in the stool, and abdominal cramps and tenesmus Any of these should warrant a digital rectal examination and a proctosigmoidoscopic examination, at which the polyps may be seen under direct vision and tissue removed with the biopsy forceps from suspicious areas for microscopic section Sometimes proctosigmoidoscopic examination will not reveal any suggestive lesion, and then the contrast enema must clinch the diagnosis and demonstrate the extent of the disease Ascorbic acid and blood transfusions are helpful in preparing patients with polyposis of the colon for operation Partial or total colectomy is the procedure of choice An end to-end anastomosis between the terminal portion of the ileum and the distal 3 cm of the sigmoid over a rubber tube reduces the number of suture lines to a minimum, provides adequate decompression proximal to the suture line, thus removing intraluminary tension and accelerates the rate of wound healing by its splinting effect The anastomosis should be carried out prior to the surgical removal of the colon Although the major branches of the superior mesenteric artery must be ligated individually, the trunk of the inferior mesenteric artery can be ligated close to its aortic origin The one stage procedure permits surgical treatment at the optimum time, and the remaining rectal segment can be checked and other polyps destroyed by fulguration through a proctoscope The author reports on two families with polyposis whom he has treated In each case a parent and two siblings were involved

American J Digestive Diseases, Fort Wayne, Ind

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American J Obstetrics and Gynecology, St Louis

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*Paravertebral Lumbar Sympathetic Block in Labor Report on 500 Deliveries by Fractional Procedure Producing Continuous Conduction Anesthesia A. M Reich—p 1263
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Paravertebral Lumbar Sympathetic Block in Labor—Continuous lumbar sympathetic conduction anesthesia is produced by fractional dosages of 1% procaine solution with reinjections as needed throughout labor The solution is deposited bilaterally at the anterior surface of the first lumbar vertebral body Only one needle is inserted on each side, and this is removed following the original injection, after a fine plastic catheter has been placed through its lumen These tubes serve to carry the anesthetic solution to the area as often as necessary A limited part of the autonomic nervous system, namely, a segment of the lumbar sympathetic chain and ganglions containing afferent and efferent fibers to the uterus, cervix, and vagina, is blocked The anesthetic does not come in contact with the spinal somatic nerves, the spinal canal, or the epidural, subdural or vertebral foramina areas Contrary to other regional conduction methods (epidural or subarachnoid) used in obstetrics, in which pathways containing mixed nerve structures are bathed by the cocaine derivatives, this method limits its action to the sympathetics The muscular contractions of the abdominal muscles in the second stage of labor are not impaired, but inasmuch as the innervation of the lower parturient canal, comprising the pelvic floor, perineal body, and structures about the introitus, is derived through the somatic nerves, namely the pudendal and iliac inguinal nerves, the sympathetic nerve block will not be effective in blocking painful stimuli from these areas during the final phases of labor A bilateral pudendal nerve block, therefore is used to produce regional anesthesia at these levels However, it is given earlier than is ordinarily the case, namely, in a multipara at about four-finger cervical dilatation, in a nullipara after the onset of the second stage The advantages other than the relief of pain are that the physiological changes occurring during labor in the lower uterine segment and the cervix are enhanced The forces of labor are either increased or at least remain undiminished, and labor is shortened The termination of labor by a spontaneous delivery or by elective perineal forceps may usually be expected The newborn infant breathes deeply and cries immediately after delivery He presents no evidence of anoxemia or massive aspiration of foreign material, unless some unrelated obstetrical problem has intervened The mother is alert, cheerful, relaxed, and cooperative

Continuous Drip Subarachnoidal Block for Labor and Delivery —Continuous-drip spinal anesthesia was administered to 52 parturient women after labor had begun The skin and underlying structures at the level of the third lumbar interspace were infiltrated with 1 ml of procaine hydrochloride (novocain®)-ephedrine solution A spinal tap was then made with a special 18 gage needle and the vinylite® catheter introduced 1 in into the subarachnoid space After removal of the spinal needle, a blunt 23 gage needle was inserted into the distal lumen of the vinylite® catheter and the hub of the needle was closed with a metal plug for the female Luer lok adapter The catheter was then directed transversely across the back of the patient to her side and secured in this position with adhesive tape Immediately following a uterine contraction with the patient in the sitting position, 2 ml of 2 5% procaine solution was introduced slowly from a Luer lok syringe Forty-five to 60 sec after this injection, the patient lay flat on her back until the level of hypalgesia to pin prick extended to the tenth thoracic dermatome The patient was then elevated to a semi recumbent position by raising the back rest to 45 degrees A continuous-drip subarachnoidal infusion of 0 5% procaine hydrochloride was begun at the rate of 3 to 4 drops per minute About 15 to 20 min after the start of the continuous subarachnoid drip, the bed rest was lowered to 15 to 20 degrees Maternal blood pressure and fetal heart tones were checked every 15 min The rate of the subarachnoidal drip was also checked periodically The patient was instructed to bear down" synchronously with the uterine contractions Before the patient was moved to the delivery table, 50 mg of meperidine (demerol®) hydrochloride was injected intramuscularly The continuous drip was discontinued, and the hub of the needle in the distal end of the catheter was closed with the metal plug Before delivery, it was occasionally necessary to administer another 2 ml of 2 5% procaine solution After delivery and repair the patient was turned on her side, her back was arched and the catheter was removed A dressing was taped over the puncture site By means of this technique, complete pain relief can be afforded early to parturient women without significant interference with the process of labor and delivery

American Journal of Public Health, New York

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Mechanism of Liquefaction of Tubercles I Behavior of Endocellular Proteinases in Tubercles Developing in Lungs of Rabbits. C Weiss and M L. Boyar Manstein —p 694

Tuberculous Cavities of Lower Lobe.—Cavitary tuberculosis of the lower lobes has presented a problem in management since the inception of collapse therapy With the newer means of treatment available such as resection, pneumoperitoneum, and streptomycin it was believed that a study of a group of patients with lower lobe cavitary tuberculosis largely treated by the older methods was essential to evaluation of the new methods Lower lobe cavitation accounts for from 20 to 25% of tuberculous cavitation. A group of 103 patients with lower lobe cavitary tuberculosis was collected for study Of these 57 patients had tuberculosis limited to one lower lobe (group A) and 46 had more widespread disease with the lower lobe cavity presenting the principal therapeutic problem (group B) Collapse therapy was used in 97 of the patients the great majority received pneumothorax or phrenic nerve interruption alone or in combination The results of therapy with regard to cavity closure and the patients' status observed at an average follow up period of four and one half years after discharge from the sanatorium did not differ appreciably with the three therapeutic methods The results in the cases with more widespread tuberculosis were poorer than in the unilobar cases particularly when they were treated with pneumothorax The over all results in the series of 103 patients were as follows in 73 patients, the tuberculosis has become inactive in 12, the disease has remained active and in 18 patients the tuberculosis has proved fatal In the 57 patients with tuberculosis limited to the lower lobe the disease has become inactive in 48 patients, remains active in four and has proved fatal in five

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Corticotrophin and Cortisone in Asthma and Eczema.—Corticotrophin (ACTH) and cortisone were used in the treatment of three children who had eczema and 10 who had bronchial asthma Their ages ranged from 18 months to 15 years Both corticotrophin and cortisone proved to be potent agents in the temporary relief of chronic atopic dermatitis (eczema) and bronchial asthma Infants and children react to these hormones essentially as do adults, except that they require larger doses in proportion to their body weight The dosage depends on the severity of the disease more than on the age or weight of the child The greater the improvement obtainable by specific management, the less will be the amount of hormone required This is important not only because of the cost of these hormone preparations but also because of their possible deleterious effects over long periods The longest remission in asthmatic children occurred in a boy of 9 who remained symptom free for four months after corticotrophin therapy was stopped The authors believe that without these drugs, 11 patients would have required long periods of hospitalization or would have been obliged to try the uncertain effects of a change of climate However, these drugs are as potentially harmful as they are beneficial and in the present state of knowledge should be used only when absolutely necessary and with the closest supervision

Khellin in Bronchial Asthma —Khellin is obtained from a plant known in Arabic as Khella ' and in English as 'Bishop s Weed ' It belongs to the carrot family, which also includes parsley, parsnip, celery, anise, caraway, and dill After reviewing the recent literature on the synthesis and pharmacology of khellin, the authors recapitulate two recent reports on the use of khellin in asthma and then describe their own observations on 45 asthmatic patients Khellin was administered, in 100 mg doses to 20 patients by the intramuscular route and to 25 patients by the oral route Good or excellent results were obtained in 12 and slight or no benefit in eight of those receiving intramuscular injections of the drug Similarly; of the 25 patients who were given khellin by mouth, 14 had good or excellent results and 11 slight or no benefit Pain at the site of reaction headache, and nausea were observed in some patients One advantage of khellin is its prolonged action Also, it should be particularly useful in asthmatics with concomitant hypertension From the results obtained in this series of 45 patients and in other patients now under observation, it is felt that khellin will have a useful place in the treatment of bronchial asthma

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Banthine® in Duodenal Ulcer.—Banthine® (beta-diethylaminoethyl xanthene 9-carboxylate methobromide) was given to 137 patients for periods of two to 12 months All but 20 of these patients had duodenal ulcer, and in most of them the ulcer had proved intractable, 21 having had massive hemorrhages seven obstruction, and nine surgery for perforation The dosage used was 100 mg every six hours for the first two months and then the dose was usually decreased to one tablet (50 mg) with each meal and one or two at bedtime Of the 117 patients, 97 obtained prompt relief, while seven had definite or partial relief Two patients with cicatricial duodenal stenosis became worse while on the medication, so that the drug should probably not be used in patients with obstruction from scarring, it can be used in patients with obstruction due to spasm, edema, and inflammation after a preliminary Sippy type of treatment Two patients had a recurrence of duodenal ulcer while receiving the medication Banthine® proved effective in six of nine patients with the hyperacidity syndrome, in two with marginal ulcers, and in two with peptic ulcers in hiatus hernias but not in four patients with gastric ulcer Thus, while the results in patients wth duodenal ulcer seem to justify further trials with banthine,® the drug is not indicated in gastric ulcer

Aureomycin Therapy in Hepatic Insufficiency —Aureomycin was given as an additional treatment to 14 patients who showed signs of hepatic failure with beginning coma, despite intensive therapy Because they were unable to take oral medication, five patients received aureomycin intravenously every 12 hr, in doses of 500 mg A solution of the drug, in 10 cc of sterile distilled water added to 200 or 300 cc of isotonic solution of sodium chloride or 5% glucose in distilled water, was given rapidly during a period not exceeding 20 min The other patients were given two capsules of aureomycin (500 mg) every six hours The medication was continued in the acute cases until there was improvement and in the chronic cases for 30 to 60 days, even after improvement was shown Eight patients—seven with chronic and one with acute hepatic disease—showed improvement, two patients with chronic disease remained the same, and four patients—one with acute and three with chronic disease—died Two of the initially improved patients returned to the hospital 10 days and two and a half months later respectively, and died despite another course of aureomycin treatment The effect of aureomycin may be due to its detoxifying action on the intestinal flora when given orally and to the action on bacteria in the portal circulation or liver when given intravenously Results with aureomycin to date seem to indicate that it should be given a therapeutic trial in patients with hepatic insufficiency

Hawaii Medical Journal, Honolulu

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*Hodgkin s Disease Controlled by Chloromycetin Report of Case. S R. Brown —p 356

Chloramphenicol in Hodgkin's Disease—A woman in whom inflammatory adenitis developed after an infection that simulated virus influenza was treated with chloramphenicol intermittently for months until histological examination disclosed that the adenitis was Hodgkin s disease Since the chloramphenicol had produced fairly satisfactory results and nitrogen mustards had proved unsatisfactory this treatment was resumed The patient is still being treated with chloramphenicol, her general health is excellent, and the blood picture is normal The author feels that chloramphenicol had a definite effect on the adenitis of Hodgkin s disease and discusses the significance of this effect

Journal of Clinical Investigation, Cincinnati

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Butanol-Extractable Iodine of Serum. E B Man D M Kydd and J P Peters —p 531

Corticotrophin and Cortisone in Tuberculosis.—The seven patients who were selected for treatment with corticotrophin and cortisone had far-advanced pulmonary tuberculosis Four of them also had active laryngeal tuberculosis The course of the illness was evaluated prior to hormone administration from clinical, roentgenographic, bacteriologic, and immunologic data Whenever possible, a preliminary observation period of seven to 10 days was undertaken Each patient then received 100 mg of hormone intramuscularly in four equally divided doses at six-hour intervals for an initial 10 day period Four of the patients received corticotrophin, and three received cortisone Throughout the study all patients were kept in bed They received diets of their own selection The changes brought about by the administration of these hormones were defervescence, greater sense of well-being increased strength, improvement in appetite, as well as decrease in the edema and in the amount of exudate in the laryngeal lesions In all patients the improvement was temporary and could not be maintained by further administration of the hormones The signs and symptoms reappeared and were equal to or even more severe than those present before hormone administration Edema and inflammation in the laryngeal lesions also returned promptly The swift return of the manifestations of acute illness contrasted sharply with the relatively slow return of cutaneous hypersensitivity to tuberculoprotein and rise in the titer of the tuberculin hemagglutinating antibodies observed several weeks after cessation of hormone administration It seems clear that reactivity of host tissues sufficient to cause severe symptoms of tuberculous illness may be present without the presence of a positive Mantoux test

The Nephrotic Syndrome in Children.—Children with the nephrotic syndrome" present certain consistent clinical features, but their separation into two groups, nephrosis" and the "nephrotic stage of nephritis," has been arbitrary and frequently difficult This study was undertaken to determine if measurements of renal function would assist in the early differentiation of benign nephrosis from progressive nephritis and if studies of renal function would help to elucidate the pathogenesis of the nephrotic syndrome Estimations of glomerular filtration rates renal plasma flow, and maximal tubular excretory capacity were made in 29 nephrotic children These were a fairly typical sample of a total of 90 nephrotic children recently observed at the clinic at which these studies were made It was found that conventional clinical criteria frequently proved unreliable early in the course of the nephrotic syndrome as indexes of the functional status of the kidney or as guides to the subsequent course of the patient The triad of anemia, acidosis, and azotemia, when correlated with a diminished glomerular filtration rate, indicated incompetence of the nephron for biochemical regulation and probable morphologic damage with poor prognosis Fluctuating changes in glomerular filtration rate, renal plasma flow, and maximal tubular excretory capacity during the nephrotic syndrome suggested that variations in these measurements are a function of the severity and duration rather than type, of disease The biochemical and renal functional patterns indicate that reversible metabolic and hemodynamic rather than irreversible anatomic nephron damage frequently occurs. With progressive disease of long duration greatly impaired renal function suggested that irreversible parenchymal destruction gradually supersedes the earlier physiological changes, with culmination in renal failure The primary etiological mechanism remains undetermined, however, the idiopathic nephrotic syndrome in children, whether called pure or lipoid nephrosis, mixed nephritis, or nephrotic stage of subacute or chronic glomerulonephritis, appears to be a form of nephritis in which functional alteration and eventual anatomic changes indicate that the glomerulus is a primary site of the disease process Spontaneous or induced remissions may proceed to apparent recovery, if the unknown etiological mechanism is inhibited before extensive anatomic damage has supervened

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Diagnosis and Prognosis of Behavior Disorder Associated with Organic Brain Disease in Children A. A. Silver —p 38

Cardiovascular Syphilis.—The essential pathological change in syphilis of the cardiovascular system occurs in the aorta Spirochetes invade the aorta early (during the secondary stage) and involve the vasa vasorum of the adventitia This interference with blood supply affects the muscular layer Round cell infiltration occurs and eventually there is destruction of the muscle fibers with replacement fibrosis The resulting loss of elasticity of the aortic wall causes subsequent changes, such as insufficiency of the aortic valve, stenosis of the ostia of the coronary arteries and aortic aneurysm While it has been stated that the average duration of cardiovascular syphilis from diagnosis to death is three years this means little in the individual case, each patient must be evaluated individually Factors influencing prognosis include (1) the presence or absence of symptoms of diminished cardiac reserve, (2) the size of the heart, (3) the age of the patient (presence or absence of arteriosclerosis), (4) the type of work performed, and (5) the amount of previous antisyphilitic therapy and when it was given in relation to the discovery of cardiovascular involvement Patients with cardiovascular syphilis respond to the usual cardiac therapeutic measures better than was previously thought There has been much discussion concerning the dangers of antisyphilitic therapy in cardiovascular syphilis The major fear is the Herxheimer reaction (therapeutic shock), in which edema of the aortic wall may occur secondary to the rapid killing of spirochetes This edema may involve the coronary ostia, causing their occlusion, or may weaken a damaged aneurysmal wall, causing it to rupture The authors believe that this hazard has been greatly exaggerated They encountered no adverse reactions in 69 patients with aortic insufficiency and/or aneurysm who were treated with penicillin They favor procaine penicillin in oil with 2% aluminum monostearate It may be given in doses of 600,000 units daily, every other day, or three times weekly, for 10 doses

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Tuberculosis of Urinary Tract Present Nonsurgical Treatment G E Slotkin —p 760

New Approach to Heart in Cardiac Arrest.—In Wexler and Bromberg s method of reaching the heart in cases of cardiac arrest the left side of the chest is entered by blunt upward burrowing between the deep surface of the posterior rectus sheath and the anterior slip of the diaphragm in a region where the diaphragm is not attached to the costal arch A longitudinal incision cuts the anterior slip of the diaphragm By inserting the fingers and burrowing behind the posterior rectus sheath and in front of the diaphragmatic muscle tissue, one enters the left side of the thoracic cavity without obstruction On entering the chest, the fingers divide the junction of the parietal and diaphragmatic pleura If the distance from the xiphoid to the point of origin of the diaphragm on the costal arch is too small, the attachments of the diaphragm can be separated to any distance necessary to admit the hand for cardiac massage The patient died in whom this method was used, but the authors feel that familiarity with it should eliminate delay by the average surgeon Access to the heart is gained through a natural anatomic plane of cleavage, which eliminates the need to incise the diaphragm or the chest wall Closure is accomplished without additional suturing

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*Prenatal Multiple Immunization P Cohen, H Schneck and E Dubow —p 696
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Hemolytic Disease of the Newborn in Dizygotic Twins Interesting Family History J J Kelly and J G Shaffer —p 717
Salmonella Infections of the Newborn Infant. H C Epstein A Hochwald and R Ashe —p 723

Subdural Hematoma, Hygroma, and Hydroma in Infants.—This paper deals with 22 children less than one year old who had symptoms of subdural hematoma In all but one of the children the symptoms began during the first four months of life, and in 10 of these during the first week In 16 the history showed prematurity, prolonged labor, abnormal presentation, difficult forceps delivery, or cesarean section Other types of trauma were known in three instances Two patients had infections that may have been causally related to the onset of the hematomas The commonest symptom was some type of gastrointestinal upset. The diagnosis of subdural hematoma was made by subdural and spinal punctures in 12 of the 22 cases All showed bloody and/or xanthochromic subdural fluid in the presence of spinal fluid with a normal protein content The demonstration of a dilated subdural space by oxygen injection led to the diagnosis in six patients, one of whom had clear subdural and spinal fluids All of the remaining patients had bloody and/or xanthochromic subdural fluid with clear spinal fluid The diagnostic subdural puncture relieves the acute pressure on the brain, and thus it must be the aim of the surgical treatment to prevent the late effects of chronic pressure by either a constricting membrane or a persistent collection of subdural fluid Thirty operations were performed in 17 patients, 25 osteoplastic flaps were made, and five trephinations were performed The terms used to describe the conditions found at operation were chronic subdural hematoma, to indicate bloody and/or xanthochromic fluid encapsulated by a well-defined neomembrane, hygroma, to indicate a collection of xanthochromic fluid free in the subdural space with a nonencapsulating neomembrane, hydroma, to indicate a collection of colorless or slightly xanthochromic fluid free in the subdural space with no evidence of a neomembrane The merit of these distinctions is that they carry with them specific implications for treatment. The authors concluded that they all may represent stages in healing of subdural or intradural hemorrhage and that birth trauma is the commonest precipitating factor

Prenatal Multiple Immunization—A group of women attending a prenatal clinic were given a Schick test on admission Immunization procedures were carried out on these women in the last trimester of pregnancy Schick positive mothers were immunized against both diphtheria and whooping cough, Schick-negative mothers against whooping cough alone Certain patients of both groups were inoculated with a single injection of influenza virus vaccine The injections were so spaced that immunization was completed approximately six weeks before delivery The immunizing series for pertussis and diphtheria consisted of three injections given at intervals of four weeks For influenza immunization, one injection was given six weeks before the expected date of delivery Blood for titration of antibodies was taken from the mother before the immunizing series was begun and again at delivery Cord blood, representing the fetal circulation, was also taken at delivery It was found that 80% or more of the women responded with high titers of antibodies These protective titers were quantitatively passively transferred to the newborn babies, in whom they persisted for three months or more There were no adverse effects on either mothers or babies from inoculations given in the last trimester of pregnancy The method of prenatal multiple immunization would seem to protect the newborn baby against diphtheria and pertussis, and if need be, influenza and tetanus during the first three months of life when effective active immunity cannot be established Active immunization should follow at 3 to 4 months of age, when passive immunity has been lost and when mechanisms for establishment of active immunity function more efficiently than at an earlier age

Kentucky Medical Journal, Bowling Green

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*Veratrum Viride and Hexamethonium in Treatment of Severe Diastolic Hypertension E D Freis—p 297
Medical Management of Pulmonary Embolism J M Evans—p 305
Pulmonary Complications Following Abdominal Surgery E J McDonald—p 310
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Veratrum Viride and Hexamethonium in Hypertension—In most of the patients with hypertension discussed here the diastolic pressure was persistently above 120 mm of mercury, even during bed rest The patients who did not respond to conservative treatment, such as rest, reassurance, and sedation, were given purified extract of veratrum viride in tablet form or a low sodium diet or both In rare cases veratrum alone kept the patient's blood pressure in the benign range, in a greater percentage diet plus veratrum was required, and in still others sympathectomy and diet plus various types of drug treatment had to be used together Veratrum derivatives are difficult to regulate over long periods, for the following reasons 1 Varying dosage requirements in different patients necessitate individual adjustment. 2 During therapy with veratrum there is considerable fluctuation in blood pressure from day to day, although the average may be lower In some of the most severe cases it was necessary for a member of the family to check the blood pressure before each dose of the drug 3 The margin between the dose that lowers blood pressure and that which produces side-effects is narrow During the past six months the effects of the new ganglionic blocking agent, hexamethonium, or C6, have been investigated in patients with hypertension at the author s clinic This agent produced sustained reductions of arterial pressure in almost all hypertensive patients A remission of the malignant phase of hypertension occurred in 11 of 15 patients The four who did not respond had advanced renal failure with uremia Tolerance developed rapidly when the doses were repeated at intervals of four or six hours, but, when separated by 12-hour intervals, the development of tolerance was largely prevented If under these circumstances the drug becomes ineffective, the hypotensive action can be restored by increasing the dosage The average initial dose was 10 mg, but after several weeks of continuous therapy the average effective dose was 35 mg The commonest side-effects of hexamethonium were dry mouth and constipation, the most serious reactions were paralytic ileus and inability to urinate All of these side-effects can be overcome by the concurrent administration of the urethane of bethanecol chloride (urecholine®) in doses of 10 mg under the tongue three times a day

Minnesota Medicine, St. Paul

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*Combinations of Antibiotics in Treatment of Infectious Diseases W E Wellman—p 537
*Effect of Cortisone in Glomerulonephritis and Nephropathy of Disseminated Lupus Erythematosus W E Jacobson B I Heller and J P Hammarsten—p 541
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Coin Lesions of Lung D L. Fink—p 554
Management of Vasomotor Rhinitis. J B McBean—p 556
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Combinations of Antibiotics.—This report concerns the synergistic and antagonistic effects of combinations of penicillin, dihydrostreptomycin, aureomycin, chloramphenicol, and terramycin Laboratory reports supporting the clinical use of combinations of the various antibiotics are confusing and in some cases contradictory Furthermore, in many instances the clinical significance of the laboratory data is yet to be established However, a few facts of significance seem clear First, a synergism between penicillin and dihydrostreptomycin has been established Second, there appears to be an antagonistic effect between penicillin and aureomycin or chloramphenicol Third, certain bacteria made resistant to aureomycin, to terramycin, and to chloramphenicol do not show an increased resistance to dihydrostreptomycin Bacteria made resistant to dihydrostreptomycin do not show an increased resistance to the other three antibiotics These findings indicate that combinations of aureomycin and dihydrostreptomycin are effective in the treatment of brucellosis, and that combination of aureomycin or terramycin with dihydro streptomycin would be effective in the treatment of peritonitis meningitis, and bacteremia, when the organism causing these infections is unknown The recommended treatment in subacute bacterial endocarditis due to enterococci consists of a combination of penicillin and dihydrostreptomycin This combination is also advisable when the etiological agent is unknown

Cortisone in Glomerulonephritis.—Four patients in the various phases of glomerulonephritis and two patients with the nephropathy of disseminated lupus erythematosus were studied during cortisone administration The drug was given in doses of 100 150, or 200 mg daily for periods up to 30 days Transient improvement in renal function, as measured by the renal plasma flow and glomerular filtration rate, occurred during the administration of cortisone, but hematuria and albuminuria did not decrease, and, in some instances, increased Cortisone had no demonstrable beneficial effect on the basic pathological process in the glomerular capillaries In both patients with lupus erythematosus, severe hypertension was produced

Nebraska State Medical Journal, Lincoln

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**Intravenously Administered ACTH Preliminary Report* A E Renold P H Forsham J Maisterrena and G W Thorn —p 796
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Intravenously Administered ACTH —Renold and associates report on about 100 subjects who received corticotrophin (ACTH) intravenously The substance was dissolved in 500 ml of saline solution or a 5% solution of dextrose in water and was infused intravenously over a period of eight hours When 20 mg of corticotrophin is given in this manner maximum adrenal cortical stimulation results in the average person In addition to representing a substantial saving in material and cost of therapy, the intravenous route activates the adrenal gland in patients unresponsive to intramuscularly administered corticotrophin and is capable of reactivating the adrenal cortex suppressed by cortisone therapy No anaphylactic reactions have been noted, however, until a much larger group has been studied, patients should be watched for the first 30 min of the infusion The longest follow up period is five months at the time of writing and as many as 32 infusions have been given to the same patient over a period of 16 weeks without evidence of sensitivity reactions Of 12 representative cases, six who had rheumatoid arthritis were given corticotrophin intravenously for 12 to 19 consecutive days, and satisfactory remissions were obtained Whether the permanent results differ from those obtained with large doses of intramuscularly administered corticotrophin remains to be seen Exfoliative psoriasis resistant to intramuscular corticotrophin, acute exfoliative dermatitis following the use of penicillin ointment, acute gout, generalized Boeck's sarcoid, ulcerative colitis combined with rheumatoid arthritis, and nephrotic edema are other conditions that responded to the intravenous administration of corticotrophin The authors conclude that the clinical results obtained with intravenously administered corticotrophin (20 mg daily) compare favorably with those obtained with doses of five to 10 times this amount given intramuscularly

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*Complications of *Diuretic Phase of Lower* Nephron *Nephrosis Report of* Case Manifesting Tetany I S Ravin P R Aronson and J H Yules —p 830
Twenty Year Hospital Survey of Diabetic Deaths N Blumberg and L. Zisserman —p 833
Medicine as *Social Instrument Journalism J Garland —p 838*

Treatment of Eosinophilic Pneumopathy —Vines and Clark present the case of a woman, 41, who had been relatively healthy, except for being subject to hay fever since the age of 15 Her present disorder, which had begun as a cough and cold, was tentatively diagnosed as bronchopneumonia and then as virus pneumonia Treatment with penicillin aureomycin, and then with streptomycin and penicillin failed to produce the desired therapeutic effect Examination of the blood revealed significant eosinophilia and repeated chest x ray films disclosed increasing pulmonary infiltration Low grade fever and a rapid pulse rate continued, but repeated sputum studies were negative for acid fast bacilli The sputum was loaded with eosinophils When resumption of treatment with antibiotics proved ineffective diagnoses of a Loeffler type of syndrome or of periarteritis nodosa were entertained Respiration became more labored, and the patient had to be placed into an oxygen tent Before treatment with corticotrophin (in 25 mg doses every six hours) was started, the eosinophil count was 9,100 per cubic millimeter Within 24 hours there was much improvement, and the temperature dropped to normal The blood sedimentation rate began to decline After two days of therapy the absolute eosinophil count was 25 per cubic millimeter The chest roentgenograms also revealed a remarkable response The corticotrophin appeared to be life saving for this patient She has now been active for over a year, although mild allergic symptoms and low-grade eosinophilia persist This woman was more acutely ill than the average patient with a Loeffler syndrome, also known as eosinophilic pneumopathy or the E-P syndrome

Tetany During Diuretic Phase of Lower Nephron Nephrosis.—The case presented illustrates problems associated with the diuretic phase of lower nephron nephrosis The case is noteworthy because it is the first in which tetanus developed during the diuretic phase The appearance of tetany after an intravenous infusion that contained enough potassium to raise the serum potassium level from 3 1 to 5 2 mEq per liter suggests that an alteration in the calcium potassium ratio may have played a part Either ionized calcium depression or potassium elevation may cause increased neuromuscular activity The tetany probably developed in the following manner Hypocalcemia and hyperphosphatemia occurred during renal shutdown because of failure of the kidney to excrete phosphorus (and phosphorus rise from tissue breakdown), with greater loss of calcium into the gut and urine, chronic acidosis led to the ionization of a great part of the available serum calcium, pulmonary edema with hyperventilation resulted in a shift in serum pH toward the alkaline side, with decreased concentration of ionized calcium, and potassium administration altered the calcium potassium ratio, producing increased neuromuscular activity The authors stress that the complications of the diuretic phase of lower nephron nephrosis may be as dangerous as the preceding period of anuria Uremia may persist far into the recovery phase Massive diuresis may result in water and electrolyte depletion Attempts to prevent dehydration by intravenous replacement of the total volume of fluid lost may result in pulmonary edema When diuresis reaches the extent of 4 L in 24 hours, it may be dangerous to administer 5 L of fluids In the presence of low serum calcium and potassium, administration of potassium may result in tetany, unless calcium is administered simultaneously

New Jersey Medical Society Journal, Trenton

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Oklahoma State Medical Assn J., Oklahoma City

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•Methemoglobinemia in Infants Due to Ingestion of Nitrates in Well Water H G Nelson and H. R. Sanders.—p 232
Premature Infant Mortality N J Robinson and C. H Hall —p 235

Methemoglobinemia in Infants and Nitrates in Well Water.—Two cases of methemoglobinemia in infants are presented in which well water with a high nitrate content had been used for the preparation of the formula The first case is of interest in that the baby had been given the formula in which well water was used as the diluent for only three days before development of the cyanosis. The relatively rapid development of the cyanosis was apparently due to the high concentration (728 ppm) of nitrate in the water The high bacterial content and the shallowness of the well may have been additional factors When a physician observes cyanosis in an infant, especially in one under 6 months of age, who is fed with well water and who has no other physical abnormality, he should consider the diagnosis of methemoglobinemia due to the ingestion of well water with a high nitrate content. Extensive laboratory studies are not necessary A spectroscopic determination of methemoglobin will provide a definite diagnosis Well water that is to be used in the preparation of a formula for an infant should be tested for the presence of nitrates

Psychoanalytic Quarterly, Albany, N Y

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Detection of Radiation Hazards Instruments and Personnel. W F Bale.—p 656
•Diagnosis Prognosis, and Treatment of Radiation Injuries Produced by Atomic Bombs E. P Cronkite.—p 661
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Excretory Urography Clinical Trial of New Contrast Medium (Sodium 3-Acetylamino-2, 4 6-Triiodobenzoate) L. L. Robbins F H Colby J L. Sosman and W R. Eyler —p 684
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Calcification in Adrenal Neoplasms Report of Case C. L Boice and W N Sears.—p 731
Pantopaque Pulmonary Embolism During Myelography H L Steinbach and W B Hill.—p 735

Radiation Injury from Atomic Bombs.—It is widely believed that panic caused by an overwhelming fear will be the greatest hazard in the event of an atomic explosion Education and indoctrination of the public should allay this greatest of hazards in atomic warfare Radiation injury resulting from atomic weapons is of two types (1) the superficial ionizing radiation burn from soft radiation (beta), (2) total body radiation injury, "the syndrome of acute radiation injury," from penetrating whole-body radiation (gamma and neutrons) The exposed population may number in the hundreds of thousands, and a classification based on likelihood of survival may be desirable Distance from the explosion radiation dosimeters, and symptomatology may aid in the segregation into groups to facilitate prognosis and treatment With regard to prognosis the following points are stressed 1 If vomiting occurs on the day of the bombing and is followed by diarrhea, prostration continued vomiting, anorexia, and fever, survival is improbable, and death will occur in a matter of days 2 If vomiting occurs on the day of the bombing and is followed by an asymptomatic period of one to three weeks before appearance of the typical symptoms of radiation injury (purpura, epilation, ulcerations of the mucous membranes, and gastrointestinal disturbances), survival is possible 3 If there is no vomiting on the day of the bombing, survival is probable unless there are complicating factors such as burns, thermal injuries, traumatic injuries, or concomitant epidemics Epidemics in a leukopenic population may be catastrophic The treatment of the pancytopenia temporarily induced by potentially lethal amounts of radiation is essentially no different from idiopathic pancytopenia or that temporarily induced by drugs or infection There is no new drug hormone, or vitamin that when administered after irradiation will increase the survival rate, however it may be possible to increase the survival rate by accelerating recovery of hematopoiesis

Review of Gastroenterology, New York

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•Increased Incidence of Coronary Thrombosis in Chronic Peptic Ulcer L. M Morrison.—p 313
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Clinical X-Ray Conference on Localized Constricting Lesions of Colon L A. Ferguson B R Van Zwalenburg and E F Ducey —p 366

Coronary Thrombosis in Chronic Peptic Ulcer.—The autopsy records of a large series of consecutive chronic ulcer patients and of patients with other disorders were investigated for coronary thrombosis and myocardial infarction Of 116 patients who died of chronic peptic ulcer, 27 (23%) had evidence of coronary thrombosis. The comparative figure for patients dying from acute diseases was 8%, from thyrotoxicosis 4% from malignant neoplasms 6%, from "alcoholic' cirrhosis of the liver 5% and from diabetes mellitus 24% The incidence of coronary atherosclerosis and of coronary thrombosis with myocardial infarction is high, almost the same as in diabetes mellitus Although the exact mechanism of the development of atherosclerosis in patients with peptic ulcer cannot be definitely defined the author suggests that chronic or continual stimulation of the gastric vagus nerve alone may mediate these changes in the coronary arteries Prolonged, excessive ingestion of large quantities of milk, cream, butter, and eggs such as required in the Sippy diet, may also cause coronary atherosclerosis leading to ultimate coronary thrombosis with myocardial infarction These two etiologic agents in chronic peptic ulcer may act synergistically in the production of coronary atherosclerosis

Rhode Island Medical Journal, Providence

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Rocky Mountain Medical Journal, Denver

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Southwestern Medicine, El Paso, Texas

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Surgery, Gynecology and Obstetrics, Chicago

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*Endometriosis in Rhesus Monkey H Klüver and G W Bartelmez —p 650
*Evaluation of *Aureomycin Therapy in Peritonitis Report of 235 Con*secutive Cases L T Wright H Schreiber W I Metzger and J W Parker —p 661
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Calf Muscle Blood Flow Before and After Operation and During Various Normal and Pathologic States H. L Reese R. P Darrow and M L. Cullen —p 751

Endometriosis in Rhesus Monkey —An adult female rhesus monkey (Macaca mulatta) had dysmenorrhea, and post-mortem microscopic study disclosed extensive spontaneous endometriosis The monkey had been under observation for approximately nine years and four months for behavior changes following bilateral removal of the prefrontal and temporal lobes Her abdomen had never been opened until autopsy was performed Four years after the last cerebral operation she had symptoms of severe dysmenorrhea and died two years thereafter on the seventh day of a menstrual period The abdominal cavity was distended with blood and menstrual debris and showed extensive adhesions The peritoneal surface of the uterus, adnexa, bladder, and pelvic wall was covered with a tissue that had all the characteristics of endometrium It was in the process of menstruation, in some areas there had been little or no loss of tissue, elsewhere only a film of stroma remained Various conditions developing after the second temporal lobectomy may be ascribed to an endocrine imbalance related to degeneration of fibers and injuries to the hypothalamus, e g, hypersexuality, polydipsia, bulimia with progressive adiposity, and hyperplasia of the rete ovarii It is suggested that the endometriosis also resulted from the endocrine dyscrasia. Except for the apparent implantations on the intestines, this case of endometriosis can best be explained as due to a metaplasia of the pelvic peritoneum

Aureomycin in Peritonitis —This report covers 235 cases of peritonitis in which aureomycin was used There were 22 deaths, an over all mortality rate of 9 36% The mortality rate for all types of peritonitis in this series is compared with those found in the same hospital (Harlem) during the two years preceding this study, in which penicillin, streptomycin, and sulfadiazine were used Adjuvant procedures of gastrointestinal decompression, maintenance of circulating fluid volume, and infusions and transfusions were practiced in both series of patients. A comparison of the two groups reveals a significant reduction in mortality since aureomycin has been used Only seven (3 18%) of the deaths can be attributed to failure of the antibiotic therapy, and the rest were due to the surgical procedure or the patient's general condition The mortality rates have been reduced by more than 50% in several of the categories reported as compared with the two previous years Only in intestinal obstruction without resection was there an increase in mortality rate The mixed bacteriologic flora of peritonitis contains organisms that are usually quite sensitive to aureomycin Aureomycin is administered intravenously in 500 mg. doses twice daily The dosage in children is proportionately less Oral administration of a similar dose is begun as soon as gastrointestinal decompression can be discontinued This dosage schedule has been checked by the aureomycin content of blood and peritoneal fluid, by in vitro sensitivity tests of various micro-organisms to aureomycin, and by the clinical results Side reactions were minimal, and no organic toxicity was demonstrable The phlebitis sometimes resulting from intravenously administered aureomycin hydrochloride has been eliminated by the use of the glycinated form Aureomycin is considered the antibiotic of choice in the therapy of peritonitis

Texas State Journal of Medicine, Fort Worth

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Atopic Cataract Case Report. O L. Zanek.—p 294
*Hyperthyroidism Produced by Orally Administered Thyroid Extract Report of Case R. Franken.—p 297
**Management of Newborn Infant with Symptoms Indicative of Myasthenia* Gravis J G Holt and A E Hansen.—p 299

Hyperthyroidism Produced by Thyroid Extract.—The case presented was that of a woman, 34, who, until six months prior to examination, had been taking 25 grains (1 62 gm) of thyroid extract daily under a physician s supervision to lose weight She had been taking thyroid one and one half years, but only for the final 10 months did she take 25 grains daily At the end of this time the patient discontinued the medication because she had become extremely nervous and was unable to sleep Shortly afterward she noted uncontrollable tremor of the hands and short episodes of tachycardia Exophthalmos began to develop, and the tremor tachycardia, and nervousness became more conspicuous Thus, the classic picture of hyperthyroidism continued to develop during the six months after discontinuance of the medication The basal metabolic rate was + 34% The patient was treated with strong iodine (Lugol s) solution, propylthiouracil, and a mild sedative Eight weeks after the start of treatment a bilateral subtotal thyroidectomy was performed Two months after the operation the woman was almost free from symptoms

Myasthenia Gravis in Newborn Infant —Symptoms indicative of myasthenia gravis observed in a newborn infant responded to the administration of neostigmine In all of the four previously reported cases of this type, the infants were born to mothers with myasthenia gravis Two of these infants died, and two survived Infants born to mothers with myasthenia gravis should be observed during the neonatal period for symptoms of the disease If such symptoms appear, immediate intramuscular administration of neostigmine is recommended as a therapeutic test and, provided a satisfactory response is obtained, treatment with the drug should be continued for at least three weeks

FOREIGN

Archiv für klinische Chirurgie, Heidelberg

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Penicillin Therapy of Acute Hematogenous Osteomyelitis of the Cervical Vertebrae Contribution to the Problem of Conservative or Surgical Management of Acute Hematogenous Osteomyelitis Treated with Penicillin. K. Blanke.—p 25
*Present Status of Treatment of Idiopathic Megacolon in Children H Oberdalhoff —p. 45
Loss of Blood and Changes in Hematocrit Caused by Surgical Interventions. B Löhr —p 74
Renal Changes During Ileus H Eufinger —p 103

Treatment of Idiopathic Megacolon in Children.—The form of megacolon appearing in adults is usually of the symptomatic type This form increased during the postwar period of starvation It usually yields to conservative measures The idiopathic form, appearing in children, which is usually called Hirschsprung's disease, presents a more difficult therapeutic problem In this form conservative methods usually fail Interventions on the abdominal sympathetic, which a decade or two ago represented the chief surgical methods, have failed and are now generally rejected Today operations on the colon itself are again the preferred methods of surgical treatment Before the neurosurgical era the resection of the dilated portions of the colon usually took the form of a left-sided hemicolectomy Observations on the seven children discussed by this author corroborated the good late results obtainable with this method However, since it does not appear to remove the cause there is a possibility of further progression of the dilatation of the colon in the proximal portions If this happens, then total colectomy must be done More recent investigations into the cause of typical Hirschsprung s disease, in which the lower sigmoid portion is contracted, have induced some to resect this contracted portion of the colon, with preservation of the anal sphincter However, it still has not been completely proved that this difficult method removes the cause In the idiopathic form, with dilated rectum, resection of the sigmoid portion or the left sided hemicolectomy remains the method of choice for the present

Archivum Chirurgicum Neerlandicum, Arnhem

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Simple Apparatus for Nasal Administration of Oxygen. G Bosman —p 116
*Surgical Aid in Cases of Coarctation of Aorta Where Resection is Impossible. I Boerema —p 119
Artificial Stenosis of Aorta. I Boerema R Germs and J R. Blickman —p 123
Pathology, Diagnosis and Treatment of Subdural Empyema. M P De Grood —p 128
*Peptic Ulcer of Gallbladder J K. W Kehrer and A De Minjer —p 151

Treatment for Coarctation When Resection Is Impossible.—Surgical treatment was tried by Boerema in 15 patients with stenosis of the aortic isthmus End to-end anastomosis of the aorta succeeded in nine patients and end to-side anastomoses of the arcus aortae to the aorta descendens succeeded in four cases One patient died, in this case the aorta was so degenerated that the sutures could not hold the diseased tissue The case of another patient is presented in greater detail, because resection was impossible with any of the accepted methods After the isthmus had been exposed it was found that past the origin of the subclavian artery the aorta was very wide over a distance of about 5 cm Beyond this the narrowed part was several centimeters long, and the aorta descendens distal to the stenosis was as thick as a pencil as far as the diaphragm. The afferent intercostal vessels were not dilated It was impossible to effect a better inflow of blood in the aorta descendens, but it seemed essential to strengthen the dilated, balloon like part of the aorta between the origin of the subclavian artery and the isthmus since it pulsated so much more than the arcus aortae that a future rupture seemed possible The author decided to fortify the aortic wall in this region by placing around it a jacket of tissue, which might give rise to the formation of a substantial layer of connective tissue A piece of skin from the thoracic wall from which all fat had been removed was placed around the arcus aortae and the pulsating bulbus The patient recovered The usefulness of this plastic method is difficult to prove, but it may be expected that the apparently ominous and fatal rupture has been postponed for a long time.

Peptic Ulcer of Gallbladder.—The case here reported is noteworthy not only because disorders of the gallbladder are rare in children, but also because the cause was exceptional The patient was a girl, 9, who was hospitalized with severe abdominal pain and vomiting A rather large tumor was felt below the edge of the liver but could not be identified at first. After numerous examinations had failed to clarify the case, laparotomy was done, and evidence of inflammation of the gallbladder was found After this organ was removed, the patient made an uneventful recovery A viscid, black-brown fluid containing some blood clots was found when the gallbladder was opened No stones were found, but it was clear that there had been a hemorrhage into the gallbladder, which explained the enormous distention found at the start of the operation After the bloody contents were washed out, a small black point could be seen close to the beginning of the cystic duct, at the side opposite the attachment to the liver, surrounded by a moderately thickened edge, thus imitating closely the shape of a peptic ulcer in the stomach Further examination disclosed that the ulcer lay at the mouth of a small diverticulum The mucosa of the diverticulum consisted of typical acid producing gastric mucosa.

British Journal of Cancer, London

5 1-152 (March) 1951 **Partial Index**

Cancer of Lung in Relation to Tobacco M E Daff R. Doll and E. L. Kenneway —p 1
Age Curve in Lung Cancer R. Korteweg —p 21
Trisethyleneimino-s Triazine in Human Malignant Disease Preliminary Trial E. Paterson and J Boland —p 28
Coexistence at One Site of Two Neoplasms One of Local Origin and One Metastatic J G Jackson and W S C Symmers —p 38
*Investigation of Effect of X Radiation on Localization of Radioactive Phosphorus in Breast Tumours F Ellis C. Hoch-Ligeti and R. Oliver —p 45
Preparation and Assay of Rous No 1 Sarcoma Agent J G Carr and R. J C. Harris —p 83
Further Observations on Liver Catalase Depressing Action of Tumours. D H Adams.—p 115.

Radioactive Phosphorus in Breast Tumors.—Tracer doses of about 150 μc of radioactive phosphorus (P^{32}) were given intravenously to five patients with malignant breast tumors attached to the skin, and measurements were made with a beta counter applied directly to the skin, before, during, and after x ray treatment, and, in one case, during a course of diethylstilbestrol treatment The count rate recorded was much higher over the tumor (three to eight times), and to a lesser extent over the whole of that breast, than over corresponding sites on the normal breast The exponential rate of disappearance of radioactive phosphorus was found to be approximately the same for both breasts, but after the second or third x ray treatment a sudden fall was observed in the count rate over the tumor and over that breast relative to that over the normal breast This result was obtained in all cases, including one in which both breasts received the same low voltage (140 Kv) irradiation. No such change occurred during diethylstilbestrol treatment in a patient who did not respond clinically After erythema had subsided the ratios of measurements over the two breasts were found to be similar to those before treatment

British Journal of Ophthalmology, London

35 317-380 (June) 1951

Kerato-Conjunctivitis Sicca. A Stanworth —p 317
Surgery of External Rhinostomy Operations B W Rycroft.—p 328
Observations upon Movements of Eyelids G Gordon —p 339
In Vivo Examination of Lens by Phase-Contrast Microscope. J François and M Rabaey —p 352.
Appearance of Fluorescein in Aqueous or Glaucomatous Eyes S J H Miller and H Swanljung.—p 356.
Carcinoma of Lacrimal Sac N Ashton D P Choyce and L. G Fison —p 366

British Medical Journal, London

2 1279 1342 (June 9) 1951

Health of the Nation. A Daley —p 1279
*Use of Cortisone in Diseases of Eye F S Lavery L E Werner D O Donoghue and others.—p 1285
Topical Cortisone in Treatment of Syphilitic Ocular Disease G O Horne —p 1289
Some Notes on *Physique and Athletic Training With Special Reference* to Heart Size R W Parnell —p 1292
*Diabetes and Pregnancy J C Pease V Smallpeice and G G Lennon —p 1296
Lymphocytic Choriomeningitis Associated Human and Mouse Infections E. H R Smithard and A D Macrae —p 1298
Case of Chronic Neutropenia Treated by Splenectomy J R. Armstrong —p 1300
Refractory Anaemia After Arsphenamine Diglucoside (Stabilarsan) C N Partington and W Rogers —p 1301

Cortisone in Diseases of the Eye —Cortisone acetate ointment (25 mg per gm) and a 2 5% suspension of cortisone in isotonic sodium chloride solution (25 mg per ml) were used in the treatment of various diseases of the eye in 143 patients It was concluded that the method of choice is, first, subconjunctival injection, followed by the instillation of cortisone drops every two hours during the day and the application of cortisone ointment to the conjunctival sac at night, the subconjunctival injection of cortisone being given every second day The number of subconjunctival injections required varies from case to case, and local treatment should be continued until the inflammatory condition has subsided or until it is apparent that no response is being obtained If a relapse occurs the treatment should again be instituted Results showed that 30% of the patients were much improved, 27% were moderately improved, and 43% were therapeutic failures Interstitial keratitis was particularly benefited, and iridocyclitis also improved rapidly in most cases Treatment of two patients with sympathetic ophthalmia with systemic cortisone was successful Cortisone is very valuable in the control of allergic reactions in the eye but has no effect on any underlying disease that may be the basic condition The good effects of locally applied cortisone are confined to conditions involving the anterior segment of the eye In those of the posterior segment amenable to cortisone treatment, its parenteral use is indicated The local use of cortisone produced disappointing results in scleritis For this condition it seems necessary to give cortisone parenterally

Diabetes and Pregnancy —A series of 25 consecutive diabetic pregnancies beyond the 28th week is reported No mother died, and 23 babies are living The remaining two were stillborn In 12 of the mothers diabetes mellitus developed between 21 and 30 eight patients were under 21 and five were over 30 One patient was observed to have diabetes mellitus a few days before delivery, the remainder, with two exceptions, had attended the diabetic clinic regularly Eight were nulliparous 10 had had one child and seven had had two or more children Two patients were stabilized on diet alone three required less than 20 units of insulin, and 14 required more than 60 units each day Twenty-one patients had their diets increased, 17 their insulin increased, three their insulin reduced, and the remainder required no change Hormone treatment was not used, because biological assay could not easily be done and because uncontrolled use of estrogens was thought undesirable In eight patients hypertension developed, in eight edema, in one albuminuria, and in one postpartum eclampsia Six patients had hydramnios, an incidence of 23%, which was higher than usual Delivery was spontaneous in four, medical or surgical induction was practiced in 12 and cesarean section was performed in nine For both primigravida and multigravida, cesarean section is being more readily employed The good neonatal results obtained confirmed the authors' belief that termination in the uncomplicated case should be undertaken just before the 36th week of pregnancy and that delivery should be completed by the end of the 36th week If the close cooperation of the obstetrician and the physician can reduce stillbirths and intrauterine deaths, allowing the well-controlled diabetic mother to be delivered of a living baby, then the infant should stand a good chance of survival even when it is born at the 36th week After birth the skill of the nursing staff in providing careful neonatal control without overtreatment of the baby is the most important factor in reducing neonatal deaths

Deutsche medizinische Wochenschrift, Stuttgart

76 757 788 (June 8) 1951 **Partial Index**

Incidence of Hemorrhages During Pregnancy That Resemble Menstruation *Their Genesis* H Goecke —p 763
*Therapeutic Use of Radioactive Phosphorus in Polycythemia Vera. F Odenthal —p 765
Medical Treatment of Intestinal Occlusion P Busse Grawitz.—p 767
Slow Acting Estrogenic Hormone Therapy in Carcinoma of Prostate H Rosolleck.—p 770
Chloromycetin® in Treatment of Salmonella Infections P Christ.—p 772

Radioactive Phosphorus in Polycythemia Vera.—In his evaluation of treatments used in polycythemia vera, Odenthal gives particular attention to radioactive phosphorus, P^{32}, first used by investigators in the United States in 1940 He himself used this substance during the past two years in 19 patients with polycythemia vera He injected the substance intravenously in the form of an isotonic solution of sodium phosphate Radioactive phosphorus has a half life of 14 days A portion of it (in some cases up to 30%) is rapidly excreted in the urine Thus the biologic half value time is less than the physical half value time Radioactive phosphorus, just as ordinary phosphorus, is deposited in organs that have a high rate of phosphorus metabolism, in patients with polycythemia chiefly in the bone marrow So that natural phosphorus would not replace the isotopic phosphorus too rapidly, the phosphorus content of the diet was kept low for a time Radioactive phosphorus represents a causal therapy for polycythemia vera in that the blood forming organs in the bone marrow are being irradiated and the hematopoiesis is thereby inhibited Radioactive phosphorus has no hemolytic effect on the circulating erythrocytes Thus, the therapeutic effect becomes evident in the decrease in erythrocytes only after from six to 10 weeks, when the circulating erythrocytes have completed their life span A noticeable decrease in reticulocytes, however, is evident earlier The leukocyte and thrombocyte counts also decreased, but with cautious dosage irreversible changes were not observed in organs other than the erythropoietic ones The initial dose of radioactive phosphorus was usually 3 to 5 mc Since the action of this dose persists for about three months, additional doses are not given before this period has elapsed In a few rare cases a single injection was sufficient, but usually two or three injections were given The total dose in individual cases varied between 3 5 and 18 mc Good results were obtained in the 19 patients treated with this method who have been followed for up to two years The histories of four of these patients are presented

Edinburgh Medical Journal

58 153 196 (April) 1951

Tubal Factor in Female Sterility G D Matthew —p 153
Brill-Symmers Disease H Russell —p 170
Notes on History of Paediatrics in Scotland H P Tait —p 180

Gastroenterologia, Basel

76 319 382 (No 6) 1951 **Partial Index**

Etiology of Early Post-Gastrectomy Syndrome W M Capper —p 319
*Post Mortem Investigation into Relation of Peptic Ulcer with Other Medical Disorders G Watkinson —p 325
*Hirschsprung s Disease M Bodian —p 339
Further Studies in Radiology of Small Intestine J M French —p 343
Mucinases in Ulcerative Colitis H G Sammons —p 346

Relation of Peptic Ulcer to Other Disorders —An analysis of 1,992 consecutivce post mortem examinations between 1931 and 1933 showed an over-all incidence of peptic ulcer of 18 23% In 1,228 male patients the incidence was 21 8% and in 764 female patients the incidence was 7 9% Gastric ulceration was slightly commoner in women than in men (1 0 0 88), while duodenal ulceration was commoner in men (2 75 1 0) In men duodenal lesions were between three and four times commoner than gastric lesions, while the lesions were of equal incidence in women An investigation into the relationship of ulcer lesions and other pathological conditions indicated a possible tendency to peptic ulceration in young patients with coronary sclerosis and in young male patients with pneumonia and other acute infections Female patients between 45 and 54 with gallbladder disease also showed a tendency to peptic ulcer

Hirschsprung's Disease —Clinical, radiological and pathological studies on megacolon and, in particular, of Hirschsprung s disease have produced a new etiological concept which localizes the primary pathological process in the undilated segment of bowel distal to the hypertrophied and dilated part An agenesis of ganglion cells in the intramural plexuses of that segment results in absence of normal peristalsis Removal of that part of bowel by rectosigmoidectomy is claimed to be the rational treatment of Hirschsprung's disease and has given remarkable results

Glasgow Medical Journal

32 121 158 (May) 1951

Osteomyelitis Historical Survey W M Dennison —p 121
Recent Advances in Diagnosis of Congenital Heart Disease G J Aitken —p 129
*Use of Hyaluronidase to Facilitate Cutting of Free Skin Grafts Under Local Anaesthesia J A Cameron —p 150

Hyaluronidase to Facilitate Cutting of Free Skin Grafts —Experience with hyaluronidase in the administration of fluids subcutaneously suggested its use in the cutting of skin grafts with the patient under local anesthesia In the past the use of local anesthesia for this purpose presented technical difficulties Owing to lack of spread ” multiple skin punctures were required and the resulting skin surface was irregular or undulant, thus adding to the difficulty of cutting the grafts and resulted in undesirable variation in thickness of skin and, not infrequently, multiple perforations Then there was the risk of 'islands " where anesthesia was either absent or incomplete As a result surgeons were reluctant to use local anesthesia except for small areas of skin This was unfortunate in that many patients with burns are debilitated and not good subjects for general anesthesia At the Royal Infirmary in Glasgow hyaluronidase has been used in 32 patients who required skin grafting for burns Some of them were selected because they were unfit for general anesthesia Hyaluronidase was added in the proportion of 1 mg to 4 oz (125 cc) of 1% procaine solution The addition of 1 in 1,000 epinephrine (5 minims to the ounce) helped to delay absorption of the anesthetic and, by causing blanching of the skin, demarcated the anesthetic area In nervous patients preoperative basal narcosis was administered subcutaneously The donor area was the thigh After preparation of the skin, the donor area was outlined with dye and the initial puncture was made at the upper end of the area and the solution injected fan wise from here There is visible spreading of the solution Further injections are made into the already anesthetized skin, until the whole donor area has been infiltrated The anesthetic solution spreads quickly and evenly and leaves a smooth, flat surface from which a graft can be cut with no more difficulty than when a general anesthetic is used The injection of the anesthetic solution is less uncomfortable and painful than usual In these cases, healing of the donor areas occurred normally

Journal of Laryngology and Otology, London

65 397-460 (June) 1951

Observations on Abductor Paralysis of Vocal Cords A F Williams. —p 397
Some Observations on Conduction Mechanism of Ear N W Gill —p 404
Latent Tuberculosis in Tonsils and Adenoids Study of 127 Cases. A Belal —p 414
Lipoma of Larynx A C. Maconie —p 426

Journal de Médecine de Lyon

32 511-560 (June 5) 1951

Vaginal Smears in the Menopause E. Pollosson P Haour and A Ranchet —p 511
Physiopathological Sequelae of Gastrectomy for Ulcer M Girard and R Chabanon —p 521
*Effects of Bilateral Splanchnicectomy (Adrenal Enervation) on Progressive Chronic Inflammatory Rheumatism J Graber Duvernay J J Herbert F Gerbay and others.—p 537

Splanchnicectomy for Rheumatoid Arthritis. — Splanchnicectomy with section of the great splanchnic nerve where it branches off into the suprarenal ganglion and into the celiac ganglion was performed on five patients between the ages of 26 and 57 with rheumatoid arthritis (chronic progressive polyarthritis) Bilateral splanchnicectomy in two stages, with an interval of 15 to 25 days between the interventions, was performed on three patients, and unilateral splanchnicectomy on the two others In general, the operation was well tolerated except for severe fronto-occipital headache for three to four days after the intervention in one patient Temporary lumbo sacral hypesthesia of several weeks' duration was noted in all patients Within eight hours of the intervention the pain in the joints disappeared or, in joints with old destructive lesions, became less severe The inflammatory changes responded more slowly but they too regressed within four days It became possible to discontinue the administration of acetylsalicylic acid (aspirin), and walking could be resumed within 10 to 12 days after the intervention The duration of this clinical improvement varied considerably, depending on the importance of the joint lesions The sedative effect of the intervention did not last longer than 30 to 40 days in the presence of bone lesions, but its duration was prolonged in patients with only inflammatory changes The follow-up period of four to five months was too short for evaluation of the full effect of the intervention Biologic tests showed a diminution of the lymphocytes and eosinophils, an increase in polynuclears, and hyperglycemia associated, in four patients, with temporary glycosuria A therapeutic trial with corticotrophin failed in two patients, who again had severe joint pain 2 months after the splanchnicectomy On the contrary cortisone proved extremely effective when it was substituted for corticotrophin Pain subsided within a few hours, and at the same time the sedimentation rate was reduced Doses of 75 mg and then 50 mg of cortisone were given daily, with a total dose of 1 25 gm Pains reappeared after one month but again could be controlled with daily doses of 25 mg of cortisone Splanchnicectomy, by severing an adrenohypophysial interrelaship, entails temporary hyperfunction of the adrenal cortex and reduces the pituitary tutelage It thus increases the substitutive effect of cortisone, which in small doses is highly effective in patients who have undergone splanchnicectomy, to whom cortisone may be given without risk for indefinite periods, provided that improvement is persistent

Lancet, London

I 1239 1286 (June 9) 1951

Renal Failure R. Platt —p 1239
Training of Dressers in Tissue-Craft. P Clarkson —p 1242
*Significance of Convulsions in Children with Purulent Meningitis C Ounsted —p 1245
Clinical and Laboratory Observations in Smallpox Outbreak T Anderson M A Foulis N R Grist and J B Landsman —p 1248
Hyaluronidase Assay and Administration D G Evans F T Perkins and W Gaisford —p 1253
Concentration of Penicillin in Lungs Effects of Two Penicillin Esters in Chronic Pulmonary Infections A G S Heathcote and E Nassau —p 1255
Tetraethylammonium Bromide in Toxaemia of Pregnancy J G Dumoulin —p 1257
Torulosis of Central Nervous System Effects of Changes in pH and Temperature on Growth of Causal Organism W H Mosberg and J A Alvarez DeChoudens —p 1259

Convulsions in Purulent Meningitis.—This report concerns 90 consecutive patients with purulent meningitis admitted to the children s departments of the United Oxford Hospitals between November, 1946, and March, 1950, who received the chemo therapy appropriate for the infecting organism Children who did not receive the appropriate chemotherapy and children with tuberculous and nonbacterial meningitis were excluded The causal organisms were meningococcus (56 cases), Haemophilus influenzae (17 cases), pneumococcus (11 cases) beta hemolytic streptococcus (two cases), and Staphylococcus aureus, Staph albus, Escherichia coli, and Bact paracoli (one case each) It was found that purulent meningitis in young children carries a 20% mortality rate in spite of adequate chemotherapy A close association exists between failure of treatment and the occurrence and intensity of convulsive seizures Multiple seizures carry a grave prognosis Possibly both the failure of treatment and the seizures spring from the common root of irreversible cerebral damage There is, however, evidence that the seizures are themselves harmful In the patients who received prophylactic phenobarbital the reduction in failure rate ran parallel with the reduction of the seizure rate, this suggests that the anticonvulsant may well have lowered the failure rate by raising these children's resistance to seizures Further, convulsions may progress to status epilepticus, and this syndrome if uncontrolled, is fatal Routine prophylaxis with phenobarbital is safe and may lead to a reduction in the mortality rate Rapid and intensive treatment of established convulsions is indicated The drug of choice is not yet established, but the results of trials with intramuscularly administered amobarbital sodium are promising When convulsions are prevented or do not occur recovery follows in 96% of the cases

Maandschrift v Kindergeneeskunde, Leyden

19 109-144 (No 4) 1951 **Partial Index**

*Suppurative Pericarditis Conservative Treatment with Penicillin A Dekker Jonker H G Huibregtse Meyernik and H A P Hartog —p 112
*Frequency and Duration of Excretion of Tubercle Bacilli in Sputum in Primary and Postprimary Forms of Pulmonary Tuberculosis C Dijkstra.—p 119
Posterior Arachnoiditis Caused by Nematodes T P J Botman —p 141

Penicillin in Suppurative Pericarditis —A rare example of acute suppurating pericarditis in a child is reported A boy, 2, had high fever that did not subside following treatment with sulfonamide preparations The symptoms, electrocardiographic record and chest roentgenogram led to a diagnosis of exudative pericarditis Puncture in the fifth intercostal space yielded 70 cc of seropurulent fluid, which indicated acute suppurating pericarditis The cause seemed obscure at first, since the child had not had pneumonia with empyema, nor typhoid, nor osteomyelitis, but impetigo had been present for a rather long time The pericardial puncture was followed by the injection of 25,000 units of penicillin into the pericardial sac Intramuscular injections of 25,000 units of penicillin were given every three hours Culture of the purulent pericardial fluid yielded a nonhemolytic Staphylococcus, which proved sensitive to penicillin Daily pericardial punctures revealed that at first the suppuration continued to increase Quantities of 50 to 300 cc of pus were evacuated at each puncture, which was always followed by the instillation of 50 000 units of penicillin into the pericardium The general condition improved slowly, and the fluid finally disappeared However, after many weeks generalized edema and oliguria suddenly developed Both were counteracted by a mercurial diuretic Complete recovery followed A year later the child felt well and no signs of constrictive pericarditis were present Thus the purulent pericarditis had yielded to conservative therapy

Tubercle Bacilli in Sputum in Pulmonary Tuberculosis —Frequent sputum cultures were made on 106 patients with primary and postprimary forms of pulmonary tuberculosis It was found that in 82% of the patients in whom active pulmonary lesions persisted, excretion of tubercle bacilli persisted for one to 20 months Nine patients in whom the pulmonary process had become clinically inactive still showed intermittent excretion of tubercle bacilli Sixteen patients (15% of the total number) showed no further excretion of tubercle bacilli up to at least five months before the end of the sanatorium treatment (10 successive sputum-cultures or cultures of the gastric lavage were negative) Owing to the fact, however, that prolonged intermissions in the excretion of tubercle bacilli had previously occurred it is doubtful if the pulmonary process may be considered as really closed' in these cases In 79 cases (that is 74 5% of the total) the sputum became apparently permanently negative after a more or less regular discharge of tubercle bacilli had existed for a variable period

Medical Journal of Australia, Sydney

1 569 604 (April 21) 1951

Bringing up Children D W H Arnott —p 569
Retropubic Prostatectomy Comparison Between Its Results and Those of Previous Methods over Three Year Period N L Newman —p 574
Note on Hypoxia During Nitrous Oxide Anaesthesia in Dentistry G Kaye —p 577
*Methaemoglobinaemia Due to Aniline S E. L Stening —p 578

Methemoglobinemia Due to Aniline —This is a report of a boy, 14 whose trousers, handkerchief, and fingers became contaminated with aniline liquid in a chemistry laboratory when he sat on a chair on which the liquid had been spilled After about 90 minutes of exposure to the aniline fumes he complained of a headache, and within another 90 minutes he showed, progressively, pallor, circumoral cyanosis, unsteadiness of gait, and collapse Following hospitalization, he vomited, and the cyanosis increased Oxygen was given until methylene blue could be obtained When the latter was injected intravenously, recovery followed Aniline a colorless, volatile liquid that turns brown on exposure to air, gives off fumes that may be inhaled In this case the exposure from the patient's trousers, the handkerchief in his pocket, and his fingers, which may have been conveyed to his mouth, was almost sufficient to cause his death If such a potent chemical does come in contact with clothing, the clothing should be removed and the body should be washed under a shower Methylene blue should be generally available for instant use in such cases Whereas ingestion of colored wax crayons causing aniline poisoning and methemoglobinemia has been reported repeatedly, this seems to be the first case in which such poisoning was produced by the pure chemical

1 605 636 (April 28) 1951

Nasal Plastic Surgery A B K Watkins —p 606
Report of Investigation into Outbreak of Poliomyelitis in Small Town Remote from Melbourne B P McCloskey —p 612
*Relation of Prophylactic Inoculations to Onset of Poliomyelitis Study of 620 Cases in Victorian Epidemic of Poliomyelitis in 1949 B P McCloskey —p 613
Management of Infected Hand Based on Clinical Investigation of 513 Cases A R Murray —p 619

Prophylactic Inoculations and Poliomyelitis —There were 675 cases of poliomyelitis reported in Victoria from January to November 1949 of these, 620 were investigated with regard to a possible relation of prophylactic inoculations to the onset of poliomyelitis In 53 patients who had received an injection of diphtheria toxoid or pertussis vaccine, alone or in combination within three months of the onset of symptoms exact information on the date and site of injection could be obtained The severity of paralysis in the last inoculated extremities of children who had received pertussis vaccine alone or in combination was greater than in those of children who had received diphtheria toxoid alone and also greater than in the corresponding extremities of noninoculated children Thus there is evidence that recent inoculations of pertussis vaccine alone or in combination with diphtheria toxoid are more likely to be followed by paralysis than recent inoculations of diphtheria toxoid alone and that the paralysis following inoculations with pertussis vaccine alone or in combination is more severe than that following inoculations with diphtheria toxoid alone

Nordisk Medicin, Stockholm

45 745 786 (May 16) 1951 **Partial Index**

Influence of Age and Environment on History of Tuberculosis in Converters. G Hertzberg and L. Riddervold —p 747
Resection Treatment of Pulmonary Tuberculosis. K Rogstad.—p 753
Cytology of Bone Marrow and Iron Metabolism in Experimental Infection C A Adamson N S E Andersson and I Bergström —p 758
*Peroral Treatment of Polycythemia Vera with Betanaphthyl Di-Chlorethylamine (R 48) K. Iversen and E Meulengracht.—p 762
Vertebral Hemangiomas. J Jenssen —p 768
Congenital Adenoma in Rhinopharynx Combined with Palatoschisis K Zilstorff Pedersen —p 771

Peroral Treatment of Polycythemia Vera with *Betanaphthyl* Di 2 Chlorethylamine (R 48) —In five of six patients with long standing polycythemia vera definite remission followed peroral treatment with betanaphthyl-di-2-chlorethylamine for from some weeks to two months Iversen and Meulengracht advocate a beginning dose of from 500 to 600 mg daily for two months then reduction of the dosage A maintenance dose of 200 mg. daily is at present giving good results in two instances Polycythemia vera is in itself a benign disease, and close and regular control of the blood cell count during treatment is necessary because of the possible toxic effect of betanaphthyl-di 2-chlorethylamine on the bone marrow

Presse Medicale, Paris

59 869-888 (June 20) 1951

*Sclerosis of Adrenal Medulla Treatment of Human Arterial Hypertension M Riser Lavitry Gleize and Rascol—p 869
Acute Porphyria Treated by Exchange Transfusion M Deparis J Canivet J Dausset and P Rossignol—p 870
Symptomatic Triad Linked to Cardiovascular System in Hypoglycemic Shock B Yagdjoglou—p 872

Sclerosis of Adrenal Medulla and Arterial Hypertension—Using the technique of Mandache and co-workers, Riser and associates produced sclerosis of the adrenal medulla in 10 adult dogs by injecting 1 to 2 cc of 30% salicylic acid in 20% hypertonic solution of polyvinyl pyrrolidone (subtosan) into the adrenal medulla at three different points Neither acute nor subacute adrenal insufficiency was observed On an average, 75% of the medullas of the 20 adrenal glands studied were destroyed while the cortices remained almost unimpaired without any drop in arterial tension or blood sugar, or any disturbance of water and sodium chloride metabolism In seven patients with arterial hypertension who first were subjected to Smithwick s thoracolumbar sympathectomy, sclerosis of the adrenal medulla was produced by ligature of the large suprarenal vein followed by an injection of 4 to 5 cc of the salicylic acid polyvinyl pyrrolidone solution into the medulla at three different points at a distance of 1 to 2 cm The diastolic arterial pressure of 130 to 150 mm of mercury in these patients had been reduced by 10 to 15 mm as the result of 10 days of bed rest and salt free diet before the intervention This "tension at rest" was considerably reduced by the Smithwick operation combined with artificial sclerosis of the adrenal medulla In some of the patients drop in systolic and diastolic pressure by several centimeters occurred rapidly within two to three days suggesting a temporary inhibition of the adrenal cortex and requiring injections of extract of total adrenal cortex In some patients the greatest lowering of the arterial pressure occurred within five to 10 days In one patient, aged 46 with severe stenosing arteriosclerosis of the temporal artery, the drop in arterial tension was insignificant and only temporary, but in two women aged 30 and 33 with malignant hypertension and less pronounced arterial narrowing the drop in arterial tension was pronounced and prolonged For the first two weeks after the intervention the urinary 17 ketosteroids must be determined repeatedly Although neither acute nor subacute adrenal insufficiency was observed in the authors patients the 50 to 60% diminution of the 17 ketosteroids suggested considerable temporary inhibition of the adrenal cortex *It seems therefore necessary to administer* 25 to 30 mg of desoxycorticosterone acetate and extracts of total adrenal cortex in oily solution for three days before the intervention and for a period after the intervention until the normal 17 ketosteroid level has been restored As a rule Thorn s test should be performed before and after each sclerosing intervention, since administration of cortisone may be required in certain cases Because of the anatomic disposition of the adrenal medulla, its complete and elective destruction without impairment of the cortex may not always be obtained but when done cautiously this intervention may be a valuable adjuvant of conservative treatment and of Smithwick s operation for arterial hypertension

Revista Clinica Española, Madrid

40 211 286 (Feb 28) 1951 **Partial Index**

*Treatment of Localized Choreo-Athetosis by Resection of the Motor Cortex. J R Boixadós.—p 228
*Cholecystography by Oral Administration of Tetraiodophenolphthalein J Sánchez San Julian and A Pascual y Mejías—p 232
Typhobacillosis and Tuberculous Meningitis J J Herrera Rojas—p 242

Treatment of Localized Choreo Athetosis by Resection of Motor Cortex—Boixados obtained good results from resection of an area of the contralateral motor cortex by Bucy s technique in various cases of involuntary movements and in a case of unilateral choreo athetosis of the right arm and right foot This case is reported in detail The author states that the contralateral motor cortical area to be resected should be delimited by electrical stimulation during the operation and that resection of the delimited area should be ample Repeated electroencephalograms should be taken after the operation The findings of abnormal waves and abnormal rhythms in the electroencephalograms, indicating the possibility of development of epileptigenic foci in the future are indications for prolonged administration of anticonvulsive drugs In the case of choreo athetosis reported by the author the condition had lasted for 16 years The operation resulted in perfect control of involuntary movements and almost total recovery of normal movements The patient had only one attack of Jacksonian epilepsy, which occurred a few months after the operation and was controlled by anticonvulsive treatment Good results are maintained up to now eight months after the operation

Cholecystography by Oral Administration of Iodophthalein—Sanchez San Julian and Pascual y Mejías performed cholecystographies with iodophthalein administered orally to 209 patients of either sex with diseases of the gallbladder and of the liver The test gave positive results in 167 patients (80%) The authors found that the percentage of positive results is higher when cholecystography is performed after oral administration of iodophthalein than when iodoalphionic acid (priodax®) is given or when iodophthalein is given other than orally The authors stress the need for a careful technique in cholecystography

Typhoid Like Bacillemia in Tuberculous Meningitis—According to Herrera Rojas tuberculous meningitis and miliary tuberculosis in young persons are preceded by a long period of tuberculous septicemia The clinical symptoms are those of a bacillary infection The clinical course is similar to that of typhoid Erythema nodosum is present in all cases of this type that show spread of tuberculosis, and the Pirquet tuberculin reaction is strongly positive The positivity diminishes or disappears if intercurrent infection develops The diagnosis of tuberculous bacillemia is mainly based on (1) the clinical course of this period of the disease, (2) the presence of erythema nodosum and (3) the positive results of the Pirquet tuberculin test and the results of the roentgen examination of the chest Streptomycin administered in the period of tuberculous bacillemia prevents spread of tuberculosis and tuberculous meningitis

Riforma Medica, Naples

65 365-392 (April 7) 1951

Adrenocorticotrophic Hormone and Bronchial Asthma A Morelli and M Mazella Di Bosco—p 365
*Late Changes in Blood Picture Following Gastric Resection D Mainiero—p 367
Comparative Studies on Measurement of Allergy from Intradermal and Percutaneous Reactions F Nuti and A Cherubini—p 370
**Clinical Study of Post Transfusion Hepatitis* L Magnanelli—p 378

Late Blood Changes Following Partial Gastrectomy—A study was made on 20 patients four to 14 years after they had undergone partial gastrectomy The amount of hemoglobin and the number of red blood cells were compared with the preoperative values The author considered 4,500 000 as the lowest normal limit for red blood corpuscles and 90% for hemoglobin The number of erythrocytes was above 4,500 000 in 15 cases between 4 000 000 and 4 500,000 in three cases and under these figures in two cases It increased in 12 patients did not change *in six* and *slightly diminished in two* Hemoglobin was 80% or above 80% in all cases it increased in 11 patients and slightly diminished in nine Mainiero concludes that anemia following gastric resection is very rare, even a long time after the operation In cases in which it does occur it may be determined by factors that were present before or at the time of the intervention

Post Transfusion Hepatitis.—Of 220 persons who had blood transfusion and who were discharged from the hospital of an Italian region where viral hepatitis has been present for several years jaundice developed *in* 10 *(4 5%)* after an average incubation period of 50 to 100 days from the transfusion time In onset and clinical course the disease was similar to, but milder than acute infectious hepatitis However these cases could not be classified as spontaneous viral hepatitis because of the long period of incubation Nor could they have been caused by infection occurring after the patients were discharged, because the disease developed in one person who was not living in the infected section of the country At the time of the transfusion six of the 10 patients had diseases involving liver disturbances

Also, of 4,100 who did not have blood transfusions and who were discharged from the same hospital only one woman showed this type of jaundice She had been given calcium intravenously, and this case was classified as jaundice "from syringe" Thus, *the author concludes that the 10 patients had post-transfusion* hepatitis and that the number of healthy carriers of the icterogenic virus is large He suggests a thorough examination of the donors' conditions, with the exclusion of those who have had, or show signs of, liver disturbances Instruments should be autoclaved for 15 minutes at 150 C or dry sterilized for one hour at 160 C

Schweizerische medizinische Wochenschrift, Basel

81 545-564 (June 9) 1951 **Partial Index**

Differential Diagnosis of Glycosuria. G R. Constam —p 545
*Studies on Hyperventilation Tetany Simplification of Pathogenesis of Tetany K Lenggenhager —p 548

81 565-588 (June 16) 1951 **Partial Index**

Conservative Treatment of Thrombosis and Embolism in Gynecology and Obstetrics Compared to Anticoagulant Therapy W R. Merz, M Etterich and C Scacchi —p 565
*Studies on Hyperventilation Tetany Simplification of Pathogenesis of Tetany (Concluded) K Lenggenhager —p 568

Hyperventilation Tetany —Total conduction anesthesia of all the nerves of the hand by the administration of a 2% procaine hydrochloride solution was produced in healthy persons between the ages of 24 and 30 With the persons experimented on in recumbent position, hyperventilation tetany then was produced by maximum rapid and deep breathing, but the anesthetized and completely motor paralyzed muscles of the palm remained flaccid During hyperventilation the subjects, however, experienced pronounced formication in the completely paralyzed and totally anesthetized hand It was thus demonstrated that this formication was projected from the center (brain) to the periphery Pronounced psychic disturbances occurred rapidly in the course of hyperventilation even before the occurrence of tetany These were revealed by writing tests These disturbances further prove that hyperventilation tetany is mediated by the brain Hyperventilation tetany has no primary connection with oxygen deficiency and alkalosis but depends on the diminution of the blood calcium ions in the presence of a normal total calcium content resulting from the pronounced pH deviation to the alkali side This was proved by the observation that tetany subsided soon after the administration of acid (5% carbon dioxide in the inspired air), while calcium injections given during hyperventilation were ineffective The concept that respiratory tetany depends on the diminution of the ionized calcium also applies to the tetany resulting from parathyroid hormone deficiency That other forms of tetany do not yet seem to fit this concept may be due to the lack of satisfactory methods for the determination of the degree of ionization of blood calcium, to incomplete knowledge of the inhibiting effect of alkalies on calcium ionization, or to the fact that tetany may be elicited, without decreased calcium ionization, by central noxae acting on the same area of the brain that is affected by calcium deficiency (intoxication tetany due to guanidine) The absence of the prolonged S T interval in the electrocardiogram taken in persons with hyperventilation tetany should not be used as an argument against the concept of diminished ionization of calcium, because the constantly working heart muscle produces enough locally effective lactic acid to restore the deficient ionization of the hyperventilation-calcium to near normal

Semaine des Hôpitaux de Paris

27 1761-1812 (June 2) 1951

Part Played by Portal Hypertension in Pathogenesis of Cirrhotic Ascites Its Demonstration by Portal Radiomanometric Technique J Caroli A Paraf and V Schwarzmann —p 1761
Study of Certain Multilobular Gallbladders J Caroli A Paraf and Beaugrand —p 1776
*Treatment of Cirrhotic Ascites by Fractional Tapping at Short Intervals. J Caroli and A Paraf —p 1786

Treatment of Cirrhotic Ascites —In patients with cirrhosis of the liver associated with pronounced ascites and edema of the lower extremities, *respiratory and gastrointestinal* distubrances, oliguria and anorexia, one should attempt first to restore the distended abdomen to its normal condition and to maintain the latter by the technique of fractional and repeated tapping A strictly salt-free diet may be employed only as an adjuvant The authors do not share the view of other *hepatologists that* paracentesis should be done at very long intervals and as rarely as possible, because it then requires the removal of large amounts of fluid, which probably causes hypotonicity of the interstitial fluid, thus favoring cerebral edema and causing coma and death Treatment by repeated small punctures should be divided in two periods as follows during the first 10 to 15 days, 1½ to 2 liters of fluid should be removed daily, so that a larger fraction than that formed each day is removed At the slightest sign of intolerance, such as abdominal pain with or without diarrhea, smaller amounts of fluid should be removed During the second period, that of maintenance, as much fluid should be drawn off as is formed each day or two, i e, ½ to 1 liter Experience with this method of treatment in 21 cirrhotic patients with pronounced intractable ascites suggests that they are no longer invalids, it became possible to place them on a high caloric and protein diet providing adequate alimentation *with satisfactory digestion* Edema disappeared completely and permanently In one of the patients 111 liters of ascitic fluid were removed in 33 tappings in the course of eight months Although 1,110 gm of proteins were removed, they were compensated for by the better alimentation made possible by this method of treatment The amount of water and of electrolytes removed was equal to that usually eliminated by mercurial diuretics, which often are not well tolerated by cirrhotic patients, in whom the diuretics may become ineffective more rapidly than in cardiac patients Four patients were therapeutic failures and death resulted after four to nine weeks of treatment Necropsy revealed massive and irremediable destruction of the liver parenchyma despite drying up of the ascites The authors caution against treatment with repeated fractional tapping in patients with refractory anorexia

South African Medical Journal, Cape Town

25 349 364 (May 26) 1951

Cortisone in Eye Disease Three Case Reports R A Trope —p 349
Generalized Developmental Osseous Dystrophies II Achondroplasia W P U Jackson —p 350
*Carbon Tetrachloride Poisoning by Inhalation J J Prag —p 351
Lymph Drainage of Breast R. Singer —p 355
Streptomycin and P A S Sensitivity in Tuberculosis Rapid Method for Testing Numerous Specimens Preliminary Report A M Beemer —p 357

Carbon Tetrachloride Poisoning by Inhalation —The patient whose case is presented had inhaled carbon tetrachloride on Dec 1, 1950, while cleaning electrical equipment with a carbon tetrachloride spray Soon after inhalation he felt faint and dizzy, and he vomited, about 15 minutes later he complained of severe frontal headache Three days later jaundice appeared and the liver was found to be tender and enlarged The jaundice became more severe, purpuric spots developed all over the body and there were recurrent attacks of epistaxis The urinary output was low and contained albumin Dyspnea developed, vomiting continued, and the patient died 12 days after the inhalation of carbon tetrachloride, despite adequate treatment Necropsy corroborated the belief that this poison attacks the kidneys, liver and lungs The severe hemorrhagic pulmonary edema was regarded by the author as the *principal* cause of this patient s death Acute hepatic insufficiency and toxic nephrosis were considered to be contributory factors The author s analysis of the cases that have been reported in the literature indicates that there is a greater percentage of renal symptoms in cases of poisoning due to inhalation After carbon tetrachloride has been ingested, the concentration of this substance will be greater in the portal circulation, and, as a consequence, hepatic involvement will predominate

Ugeskrift for Laeger, Copenhagen

113 473 510 (April 19) 1951 **Partial Index**

*Fluid Therapy Review B Friis Hansen.—p 473
Intoxication with Local Anesthetics. M Andersen —p 489
Accidental Intraarterial Injection as Complication in Intravenous Anesthesia K. D Carlsen —p 492
Allergic Rhinitis on Basis of Focal Infection E Strandbygård —p 493

Fluid Therapy.—Friis Hansen discusses the composition of extracellular and intracellular fluid under normal conditions and the shifting in the fluid and salt metabolism that occurs in different diseases, together with the development of rational fluid therapy based on these relations Possible shock in a dehydrated patient is treated with blood or plasma transfusions An initial dehydration is undertaken with a combination of salt solution (0 9% sodium chloride) and 5% glucose, corresponding to about ha'f of the fluid quantity the patient is believed to need, preferably given intravenously Possible acidosis or alkalosis is corrected with sodium bicarbonate or salt solution Continued rehydration is carried out with salt solution glucose salt solution or Darrow s fluid in more chronic forms of dehydration Darrow s fluid is given subcutaneously or slowly intravenously Maintenance therapy covers the daily need of water and electrolytes with salt solution Darrow s fluid and 5 or 10% glucose as a calory source Electrolyte and glucose solutions can advantageously be combined when given intravenously, making the calory administration more continuous With parenteral fluid therapy of longer duration, vitamins B C, and possibly K are added to the infusion fluids The many pulmonary edemas that have occurred from overdosage of salt solution or sodium bicarbonate emphasize the need of caution it is better to give too little than too much As soon as possible the patient should take his fluids by mouth

113 549-584 (May 3) 1951 **Partial Index**

Diagnosis and Treatment of Cancer of Colon K. Lehmann —p 549
*Cancer of Pancreas Possibility of Early Diagnosis and Radical Surgical Treatment H Brocks A P Gammelgaard and E H Larsen —p 553
Cancer and Estrogenic Therapy J Christiansen —p 563

Cancer of Pancreas Early Diagnosis and Radical Surgery—On the basis of 170 cases of cancer of the pancreas in 97 men and 73 women, verified at operation or necropsy or both Brocks and his associates point to the difficulty of making a diagnosis early enough to allow radical operation They say that in the age group 50 to 70 cancer of the pancreas should be more frequently borne in mind, especially in the case of unexplained abdominal pain Careful roentgen examination of the stomach and duodenum is advised Determination of the serum lipase and the serum amylase may be of value If cancer of the pancreas is suspected exploratory laparotomy should be done as soon as possible Jaundice and, particularly pain are the more frequent introductory symptoms loss of weight and dyspeptic symptoms follow In two-thirds of the cases the tumor was localized to the head of the pancreas None of the palliative operations has prolonged life or notably eased the patient s distress It is thought that radical operation might possibly have been done in 21 (10%) of the cases

113 623 654 (May 17) 1951 **Partial Index**

*Streptomycin Treatment of Tuberculous Meningitis and Miliary Tuberculosis H C A Lassen and F Neukirch —p 623
Establishment of Tubercle Bacilli in Seminal Fluid T Hølund.—p 632.
Effectiveness of Antimycotic Treatment of Athlete s Foot P V Marcussen —p 633

Streptomycin Treatment of Tuberculous Meningitis and Miliary Tuberculosis.—Fifty patients with disseminated tuberculosis were treated with streptomycin The average observation time for all surviving patients was 28 months Lassen and Neukirch say that recovery resulted in four of the six patients with miliary tuberculosis only in 11 of the 32 with tuberculous meningitis, and in two of the 12 with both tuberculous meningitis and miliary tuberculosis Of 20 patients with tuberculous meningitis given only intramuscular streptomycin treatment, seven recovered, of 12 treated both intrathecally and intramuscularly four recovered The one patient with both tuberculous meningitis and miliary tuberculosis who received streptomycin intrathecally and intramuscularly died The results of exclusively intramuscular treatment with streptomycin in this series were thus as good as those of intrathecal and intramuscular treatment The prognosis is most unfavorable in combined tuberculous meningitis and miliary tuberculosis In the surviving patients the vestibular function was destroyed, the three adults but not the children were noticeably troubled by dizziness Calmette vaccination had not been done in any of the patients No case of disseminated tuberculosis has been seen in the Copenhagen tuberculosis station in persons in whom Calmette vaccination was done and followed by positive tuberculin reaction Thus, it would appear that Calmette vaccination of all tuberculin negative persons would prevent the occurrence of tuberculous meningitis and miliary tuberculosis

Union Médicale du Canada, Montreal

80 657-774 (June) 1951 **Partial Index**

*Surgical Treatment of Mitral Stenosis Its Indications and Results E D Gagnon and P David —p 660
Modern Lighting and Ocular Pathology E Blain —p 675
Treatment of Tuberculous Meningitis with Streptomycin. J L. Desrochers —p 677

Commissurotomy for Mitral Stenosis.—The authors have modified the Glover, Bailey, and O'Neill commissurotomy technique by inserting the blade of the commissurotomy guillotine knife between the right hand glove and a second glove finger worn on the index finger This technique was used on five men and two women, between the ages of 17 and 28 with buttonhole mitral stenosis Two patients died, one within 48 hours after the intervention and the other on the fifth postoperative day In the first the post mortem examination revealed that the median incision had been made somewhat anterior to the commissure, producing a possibly too pronounced mitral insufficiency for which the left ventricle was unable to compensate In the second case the incisions were made just at the axis of the commissures, and the cause of death could not be satisfactorily elucidated It is too early for evaluation of late functional results of the commissurotomy in the five surviving patients, but the authors were impressed by the pronounced improvement of the condition of two of the patients who had been followed up for 13 and 12 months respectively after the intervention Both are able to do work adapted to their cardiac capacity Early results in the three other patients who survived the operation are promising The presence of rheumatic activity or of involvement of other valves, particularly the aortic valve, *constitutes a definite contraindication to the operation* Mitral insufficiency was associated with the stenosis in two of the authors patients, but in only one of them was the result of the operation unsatisfactory Thus the indication for operation in cases of this type remains debatable Calcification of the mitral leaves does not constitute a contraindication to the intervention It seems advisable to perform commissurotomy as early as possible when the first signs of pulmonary congestion are manifested and before the occurrence of permanent changes in the parenchyma and particularly in the pulmonary vessels Severe hemoptysis does not constitute a contraindication to commissurotomy but an attempt should be made to restore cardiac compensation before the intervention Auricular fibrillation is not a definite contraindication but its occurrence warns of the possibility of a thrombus in the auricular appendage Despite the need for improvement of the technique, commissurotomy is the only method of treatment by which encouraging results may be obtained at present in a large number of cases of mitral stenosis

BOOK REVIEWS

Growth and Development of Children By Ernest H Watson M D Associate Professor and George H Lowrey M D Instructor Department of Pediatrics and Communicable Diseases, University of Michigan Medical School, Ann Arbor Cloth $5 75 Pp 260 with 54 illustrations Year Book Publishers Inc 200 E Illinois St Chicago 11 1951

Here is a most practical and useful book for those concerned with the care of children Originally started as a manual of factual data it has been expanded through the comments and additions of its users at Ann Arbor, as well as authorities elsewhere in this field, to consist of a small book, remarkable for its condensed, orderly presentation of up to date knowledge of the physical and mental development of children The subject coverage extends from a consideration of prenatal influences on the organism to include all potential influencing factors to the time of adolescence The growth of various organ systems is traced in categorical fashion making reference facts readily accessible by frequently used outline format and an abundance of charts and graphs In some instances, the abnormal variations of development are considered with charts showing the possible etiological factors and the studies needed for clinical differentiation

As is so welcome in a handy reference book, little discussion is made The facts are readily found and are supported by a well selected bibliography following each section, which permits the reader to pursue more thoroughly any point of interest With much of its presentation in the popular outline tabular form, this book is unique in its subject field It is complete in its coverage of the subject, although necessarily brief, and can be recommended highly for use by those new to or even experienced in the field of pediatrics

Research in Medical Science Edited by David E Green Ph D and W Eugene Knox M D Cloth $6 50 Pp 492 with 15 illustrations The Macmillan Company 60 5th Ave New York 11 1950

The various chapters in this book were written by authorities in particular fields of medical research Thus, as the editors point out in their introduction the general subject is not treated in a well integrated or orthodox fashion, and not all aspects of research in medical science are covered Chapters are devoted to such topics as the methodology of medical genetics and biochemical problems in sanitary engineering, as well as to the general subjects of viruses, chemotherapy, and neurology The style of presentation of the contributing authors lacks uniformity, but one finds this seeming defect somewhat refreshing rather than distressing In general, an attempt was made to survey the methods and problems as well as the recent accomplishments in particular fields of medical research and to discuss them in terms that could be easily understood by the nonspecialist Indeed the well informed layman would find much of the book to be completely intelligible It should be especially worth while and interesting reading for those clinicians, basic scientists, and medical students who may not have a full appreciation of the increasingly close relationship of clinical research to the fundamental sciences

On the Nightmare By Ernest Jones M D Second Edition Cloth $4 95 Pp 374 Liveright Publishing Corporation 386 4th Ave New York 16 1951

The author attempts a definitive study of the nightmare, introducing evidence from psychiatry, history, literature and mythology As a result of these investigations, he has evolved a theory that concerns the relationship between religion and the burden of guilt that everyone supposedly inherits from a primordial conflict arising from repressed incestuous wishes Phenomena of the nightmare are considered to be due to the invocation, by all peoples and all faiths through the ages, of mythological creatures such as werewolves, vampires incubi and succubi, devils, and witches, as projections of guilt The author cites two essential attributes of the nightmare 1 It arises from within 2 It is of mental origin, a sexual wish in a state of repression In this respect, the nightmare supposedly differs from ordinary erotic dreams only in that the erotic wish has been repressed He concludes that if the wish were not repressed, fear would not be associated with the dream

The book is presented in four parts The author states that much of parts 1 and 2 has previously appeared in the English and German literature In revising these for this book he has rearranged the material presented and added confirmatory material from his own professional experience

Destructive and Useful Insects Their Habits and Control By C L Metcalf M A D Sc and W P Flint Revised by R. L Metcalf M.A. Ph D Associate Entomologist University of California College of Agriculture Riverside California Third edition Cloth $10 Pp 1071 with 584 illustrations McGraw Hill Book Company Inc 330 W 42d St New York 18 Aldwych House Aldwych London W C 2 1951

This book has been widely accepted as a standard reference on economic entomology The first 10 chapters are devoted to the fundamentals of technical entomology while the remaining 13 chapters are given over to the major crop insects in the United States and southern Canada A table or key to help the reader identify a particular pest when the plant or animal attacked is known, introduces each chapter in the latter part of the book The discussions of the various pests include statements on the recognition marks and types of injury life history and significant habits and the control measures believed to be effective

The vast number of changes that have occurred in insect control during the past decade have been largely incorporated into the present edition This has necessitated the revising of several sections to include recent knowledge on insect biochemistry and physiology and a revising of information on diseases transmitted by insects New sections have been added on insect nutrition and pigmentation, new chemicals, and methods of application improved formulations, insecticide resistant insects and current control practices The subject matter is comprehensively covered in a clear and direct manner This book is to be recommended as a useful reference manual for entomologists, farmers, gardeners physicians, pest control operators, and general readers who desire practical information on insect pests, their habits and their control

Handbook of Diagnosis & Treatment of Venereal Diseases. By A E W McLachlan M B Ch B D P H Consultant in Venereal Diseases Bristol Clinical Area Bristol. Fourth edition. Cloth $4 50 Pp 368 with 160 illustrations. Williams & Wilkins Company Mount Royal and Guilford Aves Baltimore 2 1951

Events have developed so rapidly in the treatment of venereal diseases particularly in this country, that nothing so static as a book can keep altogether current with the times Although it makes a valiant effort to do so, this book falls short in some respects The author is fully aware of the growing tendency in the United States to rely on penicillin alone for the treatment of syphilis and he recognizes also the place of the newer antibiotics for the treatment of other venereal diseases It is apparent, however that experience in Great Britain with these drugs lags somewhat behind that in this country, and, as a result, the author still relies on combined treatment with antibiotics and the heavy metals for syphilis Aside from the field of treatment this little book is excellent It is well written, adequately illustrated and indexed, and there are clear descriptions of such subjects as diagnosis laboratory findings, clinical picture, and differential diagnosis

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The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated

Enterobacteriaceae Collected Studies on Salmonella Arizona Ballerup Bethesda, Escherichia Alkalescens-Dispar, Klebsiella, Shigella Providence and Proteus By F Kauffmann M D Chief International Salmonella and Escherichia Centre Statens Seruminstitut Copenhagen. Cloth $7 50 50 schillings. Pp 338 Ejnar Munksgaards Forlag Nørregade 6 Copenhagen K 1951

Dr Kauffmann has been known to American laboratory workers for more than 20 years because of his extensive studies of salmonellas Many of these were carried out in cooperation with Dr P R Edwards of the United States Public Health Service, to whom this book is dedicated

The volume contains a collection of valuable data scattered in periodicals on Enterobacteriaceae among which many genera are of medical interest Salmonellas (including the typhoid bacillus) occupy the first and best part of the book Bacteria maintaining a position between salmonellas and colon aerogenes organisms have been called paracolon bacilli for a long time They appear in this volume as the Arizona Ballerup and Bethesda groups, which however do not include all paracolons The clinical pathologist still will not know how to label a slow lactose fermenting Enterobacteriacea which forms indol Further chapters on Escherichia and Klebsiella further increase practical dilemmas The Friedlander bacillus (Klebsiella pneumoniae) has been classified with aerobacters during recent years, a concept which is acceptable by the bacteriologic taxonomist but difficult for the medical practitioner to understand who has to receive an explanatory note from the medical laboratory Klebsiella isolated from the urine or Aerobacter isolated from the sputum ' While the occurrence of aberrant strains is shown in the text the table demonstrating biochemical group diagnosis on page 16 flatly states that Escherichias do not form hydrogen sulfide and are motile, while Klebsiellas are not motile Daily practical experience especially in the United States does not allow such generalizations One has to wonder why the pioneer work of Levine, Winslow and co workers Parr Stuart and co workers and others should fall now into oblivion The author refutes the classification of Shigella alkalescens with the genus Shigella and puts this organism together with Shigella dispar, into a special group between Escherichia and Klebsiella This is justified by the serologic relationship of Sh alkalescens and Sh dispar to some Escherichia coli strains but not from the point of view of the medical bacteriologist The following chapter, on shigellae, constitutes an excellent part of the book especially the comparison of the confusing nomenclatures The pages devoted to the Providence group include a review of organisms standing between paracolons and protei The chapter on protei suggests the unification of Pr vulgaris and Pr mirabilis (ammoniae) under the name of Pr hauseri Again one would like to see more emphasis on biochemical characteristics of the species The following pages are devoted to the reciprocal antigenic relationships and the final chapter lists a number of mediums useful for the isolation of Enterobacteriaceae While the list contains the obsolete Drigalski plate one misses MacConkey s and Levine s very popular mediums A list of references in alphabetic order ends the book There are many additional quotations in the text marked with index numbers some of them are found in the particular chapters and others are entirely missing

This book contains a wealth of material based chiefly on the observations of Kauffmann Edwards Stuart and Wheeler and their co workers It is a valuable source book for the bacteriologist who is specializing in Enterobacteriaceae Since biochemical properties of the organisms, which form the base of their classification in routine laboratory work are treated as secondary characteristics and medical veterinary or sanitary aspects are neglected one cannot recommend this volume as a laboratory aid for a nonspecialized institute It should be however read by those interested in this field of bacteriology

While the work of Dr Kauffmann is most laudable and important one must accept this book also as a memento showing the increasing necessity of practical medical bacteriologists and clinical pathologists taking a firmer stand in the question of naming renaming classifying and reclassifying bacteria of medical importance

Letters of Benjamin Rush Volume I 1761 1792 Volume II 1793-1813 Edited by L. H Butterfield. Published for American Philosophical Society Memoirs of American Philosophical Society Held at Philadelphia for Promoting Useful Knowledge Volume 30 Part I Cloth $15 per set Pp 624 627 1295 with illustrations Princeton University Press, Princeton N J Oxford University Press Amen House Warwick Sq London E.C 4 1951

Benjamin Rush probably was the 18th century s most distinguished American physician He was also a politician social reformer psychiatrist church founder college founder and pamphleteer He was one of the signers of the Declaration of Independence These excellent volumes contain a collection of more than 650 letters written by Rush many of which were never before printed His correspondents included five Presidents of the United States Benjamin Franklin leading figures in science members of his family including his mother in law and friends Rush s fame sprang from his vigorous and magnetic personality from his accomplishments in medicine education and social reform from his work as a teacher and lecturer and from his letter writing He preferred writing letters to eating in fact, he once suggested that eating clubs should be prohibited He stored up everything he saw read or heard about that might prove useful to someone and he talked and wrote for the relief of his mind Rush s letters were marked by an indiscretion that was relished by his correspondents His correspondence with John Adams is especially extensive and interesting The editor of these volumes L H Butterfield of Princeton says to the deepest and finest of all of Rush s friendships that of John Adams this collection is a monument Rush s letters written to his wife his children his patients and others during the great epidemic of yellow fever in Philadelphia about 1762 are of great interest particularly with reference to the treatment of a disease of which the cause was then unknown While these letters are of special interest to physicians they can be read with profit by others interested in the early history of the United States

Social Pathology A Systematic Approach to the Theory of Sociopathic Behavior By Edwin M Lemert Cloth $4 50 Pp 459 with illustrations. McGraw Hill Book Company Inc 330 W 42d St New York 18 Aldwych House Aldwych London W C 2 1951

This book written by a professor of sociology, deals in general with aberrations or deviations from normalcy in human society such as crime and prostitution or other pathological phenomena or maladjustments in social behavior This clearly shows that the term "pathology is borrowed from medicine and applied to sociology and therefore social pathology in this sociological sense differs from the strict medical usage of the term where social pathology means the relation between genuine disease (e g , tuberculosis cancer venereal diseases or rheumatic fever) and social-environmental conditions This latter interpretation of social pathology or the social etiology of diseases and their varying prevalence in different social groups as is shown by medical statistics forms the theoretical foundation of social medicine As a medical discipline in its own right, social pathology has found special representation nowadays in England through a number of academic chairs (as at Oxford Edinburgh Birmingham and Sheffield) occupied by clinicians and public health workers, after similar developments some decades earlier in the German speaking and French speaking countries

With this new medical discipline as a systematic quantitative investigation into the social relations of all diseases Lemert s social pathology has little in common However certain chapters in the borderline area between social science and medical science such as Blindness and the Blind Speech Defects and the Speech Defective and Drunkenness and the Chronic Alcoholic which are more or less documented by statistics and show the deviation from normal behavior have beyond doubt great medical interest other chapters such as Prostitution and the Prostitute Crime and the Criminal also deserve medical attention because of their close connection with medicolegal and social problems while the chapter Radicalism and Radicals, enters political sociology, showing the differentiation of radical groups from the average "normal" population Thus, from a broader point of view, this new book, with its pertinent footnotes and references, an outline of case history studies, and a glossary of terms in the appendix will find interested readers also *in the medical profession, though the underlying theory* as expounded in several chapters in Part 1 of the book may require special familiarity with sociological concepts Among these the chapter on deviation and differentiation in society shows that the author is well aware that establishing or describing norms or normal behavior is more difficult in societal reactions or sociological characteristics of groups than in the biological traits of these groups

Enzymes and Enzyme Systems: Their State in Nature. Edited by John T Edsall With contributions by A L Lehninger and others Cloth $2 75 Pp 146 with illustrations Harvard University Press Cambridge 38 Massachusetts 1951

To this first volume of memoirs from Harvard University s Laboratory of Physical Chemistry Related to Medicine and Public Health, eight experts contribute chapters on various aspects of the physical chemistry of enzymes The work grew out of a symposium held in July, 1949, and is intended to stimulate interest in the field and further research rather than to serve as a definitive monograph

Lehninger and Green have chapters on the behavior of enzymes in mitochrondia, Emil Smith writes of the role of metals in the action of enzymes, Maehly describes the splitting of peroxidase and its resynthesis from the split products, Chance discusses the thermodynamics of some heme enzymes, and, in the last chapter, Cohn, Surgenor, and Hunter consider the state in nature of proteins and protein enzymes of blood and liver The printing and binding are worthy of a university press

The Polarographic Method of Analysis. By Otto H Müller Associate Professor of Physiology State University of New York Medical Center at Syracuse Syracuse N Y *Contributors to Chemical Education* No 2 Second edition Cloth $3 50 Pp 209 with 51 illustrations Chemical Education Publishing Co Easton Pa 1951

This book was written to present the subject of polarography in such a manner that it would be of practical value for students and teachers in physical chemistry and also serve for advanced *specialized study in analytical chemistry*

The first chapter discusses the various electro methods available for analysis The remaining seven chapters give details concerning the apparatus used discuss the fundamentals of qualitative and quantitative polarography, consider the recent developments and the *possible applications of this electro-analytical* method of analysis, and include some valuable suggestions for practical polarography The volume contains 26 experiments, which are designed to illustrate the various ideas discussed A brief bibliography and an index are also included

Bentley and Driver's Text Book of Pharmaceutical Chemistry Revised by John Edmund Driver M A Ph D M Sc *Professor of Chemistry in* University of Hong Kong Fifth edition Cloth $7 25 Pp 671 with 50 illustrations Oxford University Press 114 Fifth Ave New York 11 Amen House Warwick Sq London E.C 4 1951

This edition of this well-known and excellent British textbook has been rewritten to make it accord with the 1948 edition of the British Pharmacopoeia Because it is confined to B P products British methods of manufacture and the requirements of British students of pharmacy, it will have little use outside of the British Empire

Hypertension: A Symposium Held at the University of Minnesota on September 18, 19, and 20 1950 in Honor of Elexious T Bell M.D., Benjamin J Clawson, M D., and George E. Fahr, M.D Edited by E T Bell M.D Cloth $7 50 Pp 573 with illustrations University of Minnesota Press, Minneapolis 14 1951

This book consists of a collection of current reviews of clinical and experimental studies of hypertension by 25 leading clinicians and investigators in this field The 35 manuscripts and the several sections of discussions, questions, and answers were collected as a result of a three-day symposium The papers summarize well many *aspects of the* etiology, pathology, clinical *course, and treatment of this* disease. No effort is made to summarize the several studies or to outline classification and therapy The bibliography affords excellent reference to many early and recent publications The accumulated current studies and opinions of the essayists afford good orientation reading and stimulus for study to those investigating hypertension

A Primer for Psychotherapists By Kenneth Mark Colby M.D Adjunct in Psychiatry Mount Zion Hospital, San Francisco Cloth $3 Pp 167 Ronald Press Company 15 E. 26th St. New York 10 1951

This volume is intended to present, in simple form, elementary principles of psychotherapy for use of beginners in this field, particularly interns, residents in psychiatric hospitals and clinics, clinical psychologists, and psychiatric social workers Psychotherapy is presented not as an exact science but as a practical art in which general principles of scientific derivation are interpreted in accordance with the judgment of the individual therapist as they apply to each patient. The greater part of the book is concentrated on therapy of the neuroses, but there is a chapter on the specific differences in the approach to neurotic and schizophrenic patients The material throughout is illustrated by quotations from actual case reports

***The American Illustrated Medical Dictionary:* A Complete Dictionary of the Terms Used in Medicine, Surgery, Dentistry Pharmacy, Chemistry, Nursing Veterinary Science, Biology and Medical Biography with Their Pronunciation Derivation and Definition** By W A Newman Dorland A M M D F.A C S Lieutenant-Colonel M R.C U S Army Editorial Board Richard M. Hewitt, A M M D E. C L, Miller M.D Arthur H. Sanford M.A. M D Contributors Lloyd W Daly A.M. Ph.D Associate Professor of Classical Studies University of Pennsylvania Philadelphia, and Austin Smith C.M M D Editor Journal of the American Medical Association Chicago Twenty-second edition. Cloth. $10 Pp 1736 with 720 illustrations. W B Saunders Company 218 W Washington Sq Philadelphia 5 7 Grape St. Shaftesbury Ave London W C.2, 1951

Each edition of this great medical dictionary extends its wide reputation This edition has thousands of new terms that have been added to medical language and many new illustrations The new typography makes it more readable Other new features are a table of modern drugs and dosage and an article on fundamentals of medical etymology, which was prepared by Prof Lloyd Daly, of the University of Pennsylvania This edition appeared during the celebration of the semicentennial of this medical dictionary The publishers are to be congratulated

Adventure in Mental Health Psychiatric Social Work with the Armed Forces in World War II A Symposium by Betty P Broadhurst and others Edited by Henry S Maas. Cloth $4 50 Pp 334 Columbia University Press 2960 Broadway New York 27 1951

Contributors to this symposium are 16 social service workers, who give details of their work with the armed forces in World War II The book is in the nature of a report on what has been referred to as a significant period in the development and especially the recognition of psychiatric social work The book has three sections the first deals with psychiatric social work in the field, the second is headed upper echelon story," and the third presents implications for current civilian practice Numerous case histories accompany the discussions in the first section One appendix presents an outline of a mental hygiene unit for a replacement training center, another outlines treatment and training programs for psychiatry units Social workers in this field undoubtedly will find the volume helpful

A Few Buttons Missing: The Case Book of a Psychiatrist *By James* T Fisher M D and Lowell S Hawley Cloth. $3.50 Pp 282. J B Lippincott Company 227 231 S 6th St. Philadelphia 5 1951

This book is an informal presentation of the life and problems of a psychiatrist in 50 years of psychiatric practice The book appears to have been written *primarily for* the laity in an attempt to divorce psychiatry from the aura of confusion and mysticism that it bears in the thinking of the average *man*

The authors have illustrated their chapters throughout with selected anecdotes of a humorous and instructive nature, taken from actual patient experiences *Most of the material presented* is autobiographical, concerning the personal experiences of one of the authors, Dr Fisher, who graduated from Harvard in 1886 and entered practice in Los Angeles in 1904 Earlier, he had studied psychiatry in many of the capital cities of Europe during the developmental period of *Freudian* psychoanalysis

QUERIES AND MINOR NOTES

IDIOPATHIC HYPERLIPEMIA

To the Editor —*A young man, 19 was admitted to the hospital four weeks after receiving a smallpox vaccination on the left arm A necrotic ulcer 1 cm deep and 3 cm in diameter surrounded by an area of inflammation and accompanied by axillary lymphadenopathy was noted Clotting of a specimen of blood revealed serum that had the appearance of milk The specimen on standing for 24 hours showed a layer about 0 5 cm thick of milky substance overlaying clear serum Chemical analysis (fasting specimen) revealed on two occasions one month apart total lipids in excess of 4 000 mg per 100 cc The total cholesterol on both occasions was between 450 and 500 mg per 100 cc The total protein on admission was 9 7 gm with reversal of the albumin-globulin ratio These findings reverted to normal over a period of two weeks as the inflammatory process subsided under antibiotic therapy Repeated physical examinations and urinary and hematologic studies have revealed no abnormalities There is no evidence of lipemia retinalis It is now two months since the patient was discharged from the hospital as clinically well Weekly examinations of serum however reveal no gross change in its milky appearance This patient was inducted into the service about two months before his admission to the hospital at which time a routine serologic study was done It is assumed, therefore that he did not have lipemia when he entered the service What is the etiology mechanism and prognosis?*

M D Texas

This inquiry was referred to two authorities, whose respective replies follow —Ed

Answer —The etiology of diseases of abnormal lipid metabolism' is not well understood Most are regarded as due to defects in the latter phases of lipid assimilation and storage with consequent excessive accumulation of lipids carried through earlier normal steps of the lipid metabolic cycle In many instances, blood fat studies of a patient s family disclose cases of previously unsuspected and apparently symptom free hyperlipemia Adults with hyperlipemia may be divided into two groups prognostically 1 Apparently symptom free patients, without evidence of internal organ involvement but frequently with evidence of local skin deposits (xanthomas) The disease seems to follow a benign and chronic course with little or no change over a period of years 2 Patients with evidence of endocrinopathies or other metabolic disorders, such as hepatic disease, pancreatic disease, renal disease, diabetes mellitus, and hypothyroidism This group has a more limited prognosis, but many have a history of skin lesions for many years, suggesting pre-existing hyperlipemia of many years duration It is uncertain, in these latter cases, whether the associated condition is due to the hyperlipemia, to an independent disease, or to both

From the description given the case under discussion is one of essential hyperlipemia and merits a good prognosis That hyperlipemia was absent two months earlier is only an assumption Trauma has been thought by the dermatologists to favor appearance of xanthomas in the area of insult In some cases acute infections have preceded recognition of the disease

References

Thannhauser S J Serum Lipids and Their Value in Diagnosis New England J Med 237:515 (Oct. 2) 1947 237:546 (Oct. 9) 1947

Thannhauser S J Lipidosis Diseases of the Cellular Lipid Metabolism pp 257 287 Oxford University Press 1950

Answer —This young man has hyperlipemia of the type described by Thannhauser as "idiopathic hyperlipemia of adults with and without secondary eruptive xanthomas and occasionally accompanied by slight glycosuria Apparently secondary hyperlipemia occurring after smallpox vaccination has not been reported in the literature Since the patient is physically healthy it may be assumed that he has primary, not secondary, idiopathic hyperlipemia

It is assumed that at the service induction two months prior to hospital examination, the hyperlipemia was overlooked The mechanism of idiopathic hyperlipemia is similar in its mechanism to prolonged postprandial hyperlipemia Fat is correctly absorbed but does not go out through the capillaries, to the places of metabolism at a normal rate Therefore, the name retention hyperlipemia ' was coined for this condition The prognosis is very good These patients are not inclined to have premature arteriosclerosis They react promptly to a low-fat, low-caloric diet for example, 1,200 calories with 20 to 30 gm of fat

CHOLINE AND INOSITOL IN FAT METABOLISM

To the Editor —*May I have information on the best form of choline and inositol medication in disturbance of the fat metabolism and fatty liver degeneration? Please suggest special products or combination of products and their doses for adults Could their continued use be harmful?*

M D New Jersey

Answer —Choline and inositol medication is very questionable in its therapeutic effect in fatty livers as well as in fat metabolism in humans The experiments of Best and co-workers were conducted on rats with deficiency disease and fatty livers The effects of choline on rats are apparently different from those on humans It should not be assumed that favorable effects upon the fatty livers of choline deficient rats can be expected in the same way in humans with fatty livers of various etiologies A clear-cut effect of choline and inositol, or so-called lipotropic substances, in humans has not been reliably elicited For this reason, the question of which product, or combination of products, is advisable cannot be answered That these substances are harmful, apparently has not been reported However, their usefulness is very much doubted except in very rare deficiency diseases

AZOOSPERMIA

To the Editor —*What treatment would you follow with this patient? He is 26 years old and has never had any remarkable illness Examination reveals him to be normal except that the testes are probably a little smaller than normal He has normal libido and normal sex function Repeated examination of the ejaculatory fluid reveals no spermatozoa*

M D Virginia

Answer —Azoospermia may be due either to nonproduction of spermatozoa in the testicles or to a blockade somewhere in the duct system, most often in the epididymides The first step in differential diagnosis should be a testicular biopsy If normal spermatogenesis is present, the diagnosis of a blockade becomes obvious One then examines the epididymides to see whether there is a region that contains spermatozoa The patency of the ductus deferens may be investigated by injection or probing While the results of epididymovasostomy are often disappointing there is everything to gain and little to lose by trying this operation in suitable cases

On the other hand a biopsy may show that the seminiferous tubules are not functioning If the germinal epithelium appears normal, treatment should consist principally of systematic regulation of hygiene and the administration of thyroid in dosage sufficient to maintain the basal metabolic rate at about + 10 Other endocrine therapy is of doubtful value but gonadotropins might be tried empirically If the seminiferous tubules prove to be hypoplastic degenerated or atrophied, no treatment will help the patient

The answers here published have been prepared by competent authorities They do not however represent the opinions of any official bodies unless specifically stated in the reply Anonymous communications and queries on postal cards cannot be answered Every letter must contain the writer s name and address but these will be omitted on request.

LATENT SYPHILIS

To the Editor:—*A farmer in his early thirties came to me because of sharp sticking pains in the chest. Aside from the usual diseases and injuries of childhood and an appendectomy at age 24, a history of syphilis was discovered through a routine blood test in 1942. He had no knowledge of a primary sore and states that the physician at that time raised the question of congenital syphilis. He was given alternating courses of neoarsphenamine and bismuth continuously from March 1942 until April 1, 1944, but the Wassermann reaction has remained definitely positive. The titer of a blood specimen taken a few days ago showed a reaction of 1:16. He is married and has two healthy children. The wife's Wassermann reaction is negative. The electrocardiogram and x-ray and fluoroscopic examination of the heart reveal no definite variations from normal. Please suggest any further examinations that should be made. Should he receive antisyphilitic treatment?*

Ray S. Wycoff, M.D., Lexington, Neb.

Answer.—The diagnosis of congenital syphilis in the young farmer in question would rest, first, on the presence or absence of lesions or stigmas of the congenital disease in himself and, second, on an epidemiologic investigation of his parents and siblings. In any case in which there is a reasonable suspicion of congenital syphilis, such an epidemiologic study should be carried out. It does not appear that the patient's spinal fluid has as yet been tested. This is obligatory in all patients with syphilis. The laboratory examination should include a cell count, performed within one hour after the lumbar puncture, quantitative protein determination, quantitatively titered complement fixation test and colloidal test. If the spinal fluid is abnormal, the patient certainly needs more treatment. If it is negative, the question of additional treatment is largely a matter of psychotherapy.

The treatment of latent syphilis is entirely preventive and prophylactic. The amount of treatment necessary cannot be judged by the response of the blood serologic test, which, in patients whose treatment is begun late in the course of the infection, usually remains positive. Both the patient and the physician should understand the significance of seroresistance, and both are advised to read Moore's "Seroresistance (Wassermann Fastness) in Syphilis: A Discussion for the Patient" (*Am. J. Syph., Gonor. & Ven. Dis.* 30:125 [March] 1946).

Assuming the patient's spinal fluid to be abnormal, he should then receive 6,000,000 to 10,000,000 units of penicillin, which may be given as procaine penicillin in oil with 2 per cent aluminum monostearate, 600,000 units every second or third day to the total indicated.

If the spinal fluid is normal, there is little or no point in the administration of penicillin unless, as suggested above, for psychotherapeutic purposes.

With regard to the sharp sticking pains in the patient's chest, it would seem desirable to obtain a roentgenogram of the cervical spine in the lateral position and in flexion and extension, since a ruptured intervertebral cervical disk may cause symptoms of this sort.

RETROLENTAL FIBROPLASIA

To the Editor:—*I have to present a discussion of retrolental fibroplasia soon and there are some points that I have not been able to clarify in the literature. Is it still felt that the administration of iron and the water-soluble vitamins may play some role in the inception of this process? Has not the use of vitamin E been abandoned? Is Terry's opinion that early exposure to light may be significant still held? Is there any explanation of why full term infants usually or always have unilateral involvement while premature infants have bilateral involvement?*

Carl H. Weatherly, M.D., Louisville, Ky.

Answer.—The etiology of retrolental fibroplasia remains completely obscure. The one significant positive fact of etiologic significance is its association with prematurity. None of the clinical observations that have purported to associate retrolental fibroplasia with specific nutrients has been adequately controlled. Recent experience has shown that the incidence of this condition may undergo sudden unexplained change. During the past year, for example, retrolental fibroplasia has become very rare in Chicago, where it had been fairly common previously. In New York City, on the other hand, there has been a great increase. It is obvious, therefore, that any clinical experiment designed to evaluate possible etiologic or therapeutic factors must be carefully controlled, preferably with alternate cases. Such an experiment has not yet been reported. Kinsey and Zacharias (*J. A. M. A.* 139:572-578 [Feb. 26] 1949) correlated the supplementation of the premature infant's diet with vitamin A and iron with an increase in incidence of retrolental fibroplasia, but adequate controls for this observation were lacking, and its etiologic significance has not received general acceptance. The claim that vitamin E could prevent the development of retrolental fibroplasia has also had to be abandoned, although Owens and Owens still maintain that it decreases the severity of the condition. The use of vitamin E was discontinued by Reese and Blodi (*Am. J. Ophth.* 34:1-24, 1951) after their demonstration that the disease occurred with equal frequency in two series of unselected premature infants, one treated with vitamin E and the other untreated. Hepner, Krause, and Davis (*Pediatrics* 3:824-828, 1949) concluded that early exposure to light is not an etiologic factor, since four of five infants whose eyes were bandaged at birth later developed retrolental fibroplasia. Their conclusion has been criticized, however, because the pathological changes did not develop until after the bandages were removed. The experiment is being repeated on a larger scale at the Columbia-Presbyterian Medical Center. The bilateral occurrence of retrolental fibroplasia in premature infants may be an indication of the systemic nature of the disorder. The unilateral disease that is observed in full term infants is not related to retrolental fibroplasia, although it is frequently confused with it. This condition has been termed persistent hyperplastic vitreous (Reese: *Arch. Ophth.* 41:527-549 [May] 1949).

HEADACHE, STOMACHACHE AND EMESIS

To the Editor:—*A girl 7, with two younger siblings apparently of normal intelligence, complains of frontal headaches and stomachache followed in 10 to 30 min. by vomiting, after which she sleeps about a half hour and awakens feeling perfectly well. The attacks occur two or three times weekly, bear no relation to food ingested and may occur in the middle of the night. She has had this for about two years, has had no severe febrile illness and no birth trauma or other cephalic injury. Physical examination reveals a pale blonde and slightly undernourished child about 2 in. (5.08 cm.) taller than average for her age. Results of other examinations, including neurological tests, are normal except that she has bilateral anterior cervical adenitis. Urinalysis, complete blood cell count and stool examinations are normal. Family history discloses no epilepsy, migraine or other encephalalgia but does reveal allergies on the mother's side. The child has been free of allergic manifestations. What would you include in the differential diagnosis?*

M.D., Illinois.

Answer.—The following conditions should be included in the differential diagnosis: gastrointestinal allergy, epilepsy, emotional disturbances, errors of refraction, nasal sinusitis, increased intracranial pressure, migraine, urinary tract colic (due, for example, to stone or ureteral obstruction), intermittent gastrointestinal obstruction, indigestion (especially fats) with pylorospasm, and intestinal parasites.

The following procedures should be carried out if they have not already been included in the examination: skin tests for foods or, better, elimination diets; stool examination for parasites and, if there is mucus, for eosinophils; electroencephalograms for evidence of epilepsy and x-ray of skull and nasal sinuses; fundoscopic and refractive eye examination, intravenous pyelograms and gastrointestinal x-rays with contrast media; investigation of other behavior disturbances or maladjustments at home, school or play, and trial of a fat-free diet and soft curd milk.

REACTIONS TO PENICILLIN

To THE EDITOR —*Are sensitivity reactions more common following orally administered or parenterally administered penicillin?* *Ronald Germain M D Albany N Y*

ANSWER —Sensitivity reactions of all types are much less common after orally administered penicillin than when the drug is given parenterally In a series of over 500 patients with scarlet fever treated with between 450 000 and 1 200 000 units of penicillin daily by mouth for between seven and 10 days, only one reaction of hypersensitivity was observed This was an instance of mild morbilliform eruption, which appeared on the seventh day of treatment and disappeared promptly and spontaneously There have been seen no fevers or other sensitivity reactions with orally administered penicillin The usual incidence of reactions when the antibiotic is given parenterally is about 2 5%

ACID URINE

To THE EDITOR —*Is there anything better than ammonium chloride to convert alkaline urine to acid urine? What is the dosage of acid sodium phosphate to convert alkaline urine to acid urine?* *Joseph Halton M D Sarasota Fla*

ANSWER —Gram for gram no neutral agent yields more acid in the body than ammonium chloride, since all the ammonium is converted to urea If the kidney is capable of forming ammonium, some of this will reappear as ammonium salts in an acid urine, but the urea normally formed by the body provides most of the ammonium excreted in the urine Chloride forms no urinary precipitate, while phosphates may do so Phosphates also are retained by the kidney in uremia, while chloride is freely excreted One gram of ammonium chloride has as much effect on urinary acidity as 2 5 Gm of acid sodium phosphate The maximal dose of acid phosphate is 4 Gm , 2 Gm three times a day is considered to be adequate to yield acid urine if the diet is not rich in fruit and vegetables A meat diet leads to an acid urine but, if urea-splitting bacteria are in the renal pelves and bladder, the maximal tolerable doses of ammonium chloride or phosphate may fail to neutralize the urine The dosage of acidifying agents necessary to produce acid urine is dependent on diet and on the type of bacilluria

PRISCOLINE® AND CEREBRAL SYNCOPE

To THE EDITOR —*What is the present status of the use of priscoline® (2 benzyl 2 imidazoline hydrochloride) early in cerebral syncope with complete hemiplegia in the presence of relatively clear sensorium and established hemorrhagic cerebrospinal fluid? Blood pressure 180/130 presents no appreciable drop with the use of this sympathicolytic drug A patient 52 has hypertensive heart disease with minimal electrocardiograph deviations*

C D J Generales M D New York

ANSWER —There is no reliable information on the effect of priscoline® on the cerebral circulation and in any event it would seem contraindicated in the presence of intracranial hemorrhage

VITAMIN E AND FERTILITY

To THE EDITOR —*What is the effect of tocophorex® (concentrated vitamin E) on the fertility in male and female? Is it harmful?* *M D New York*

ANSWER —Experiments on rats and other laboratory animals have demonstrated that a lack of vitamin E (alpha tocopherol) may impair fertility in two ways First, it causes degeneration of the seminiferous tubules Second in established pregnancies it leads to death and resorption of the embryos Since this vitamin is widely distributed in common foodstuffs the ordinary mixed human diet is almost certain to include adequate amounts In theory, therefore supplementary administration would have no value In practice alpha tocopherol, natural and synthetic, has been extensively tried in the management of sterility and habitual abortion Early reports were encouraging but larger clinical experience has raised considerable doubt about the utility of this treatment At best vitamin E appears to be generally supportive rather than specifically corrective There can be no harm in one s employing it as an accessory therapeutic item

BLEEDING FROM THE NIPPLES

To THE EDITOR —*A 26 year old secundigravida nullipara now 6½ months pregnant began to have bloody discharge from both nipples two weeks ago She has had sore breasts before menses for 10 years Fluid in which red blood cells can be seen microscopically can be expressed by gentle pressure on the breasts from at least four duct openings on one breast and five on the other There are no palpable masses Three Papanicolaou stains of both breasts at two day intervals were interpreted as negative (atypical II possible adenoma?) Does bleeding from the nipples ever occur from pregnancy alone? Does the statistical possibility of cancer increase or decrease in the presence of bleeding from multiple ducts? In this case is it preferable to delay therapy until pregnancy has terminated and watch for continued bleeding?*

Edward K Strong M D San Francisco

ANSWER —This patient probably has diffuse intraductal papillomatosis Bleeding from the nipples does not occur from pregnancy alone The statistical possibility of cancer decreases when bleeding is from multiple ducts Bilateral simple mastectomy is unjustified The patient should be carefully watched If at any time a distended duct or a palpable mass becomes evident it should be excised If the bleeding continues, it can often be controlled by x ray therapy (1,500 r to each breast in divided doses)

LUPUS ERYTHEMATOSUS

To THE EDITOR —*Will L E cells that have been described in cases of lupus erythematosus disappear during pituitary adrenocorticotropic hormone therapy?*

Ronald Germain M D Albany N Y

ANSWER —Brunsting, Slocumb and Didcoct (*Arch Dermat & Syph* 63 29 [Jan] 1951) in a report of seven cases stated A signal disappointment was the failure of Cortisone [and presumably pituitary adrenocorticotropic hormone (ACTH)] to abolish the Hargraves phenomenon in the bone marrow Occasionally so-called lupus erythematosus cells were not clear-cut but always the specimens revealed signs of amorphous material as indications of a positive reaction " The plasma test of Haserick was not applied in Brunsting s cases Haserick, however reported (*A M A Arch Dermat & Syph* 63 534 [April] 1951) the case of a woman with acute disseminated lupus erythematosus in whom the results of the lupus erythematosus test were negative on three occasions The patient responded dramatically to treatment with cortisone and the results of tests became positive one week later and have been positive ever since

FIBROUS CAVERNOSITIS

To THE EDITOR —*Please give me information on the etiology and treatment of plastic penitis*

J B Evision M D Huntington Ind

ANSWER —The penile lesion referred to in all probability is that which usually is termed fibrous cavernositis (Peyronie s disease) This lesion is generally regarded as a result of chronic inflammation in the sheaths or intracavernous septums of the corpora cavernosa One or more fibrous plaques may result which are readily palpable in the shaft of the penis as firm nodules of variable size and form The lesion often causes penile deformity when in erection and may be the cause of pain The fibrous plaques usually can be distinguished from gumma or malignant lesions by their intense hardness and by the absence of clinical data which usually accompany syphilis and penile neoplasm As a rule the fibrous process gradually becomes circumscribed and the local symptoms subside Good results have been obtained in some cases by surface applications of radium A mixture of tocopherol acetates (tofaxin®) in a dosage of 50 mg three times daily has been advocated recently and has had variable results This drug consists largely of synthetic vitamin E and theoretically is supposed to favor the absorption of scar tissue Surgical excision has been employed but the results obtained often have been unsatisfactory

RESIDUALS OF CEREBRAL EMBOLISM

To the Editor —*A professional man 47 had a complete right hemiplegia 11 months ago following digitalization for paroxysmal auricular tachycardia Cerebral embolism was diagnosed Complete return of function of the extremity occurred immediately following procaine injections of the left cervical sympathetic nerves At present the only residual evidence of the hemiplegia is weakness of the extensors and adductors of the fingers and thumb with slight numbness of the skin of the distal phalanges Will exercise of these muscles eventually improve their function? What medications will be of value? At the time of the hemiplegia aphasia occurred There has been improvement in speech in the last few months but the patient still has difficulty in pronouncing many words and in writing, although the facial pharyngeal, and lingual muscles appear normal Will speech exercises further improve his speech?*

M D Michigan

Answer —Continued use, manipulation, and exercise of the affected thumb and fingers is the only form of treatment that is likely to prove beneficial, and it may be of great assistance It should be done many times every day The exact method followed matters little, as long as all joints of the affected parts are carried through a full range of all possible movement at frequent intervals The same is true of exercise in improvement of the patient s speech Again, it is not the particular form of exercise but its completeness and very frequent use every day that are important in the treatment No medicine is likely to prove beneficial

BANTHINE®

To the Editor —*What is the chemical formula for banthine®? Are there any reports of this preparation s having caused pigmentation?*

O S Philpott M D, Denver

Answer —The descriptive formula of banthine® is beta diethylaminoethyl xanthene 9-carboxylate methobromide There are no known or available reports that this preparation may have caused pigmentation

OINTMENT CONTAINING ERYTHROCYTES

To the Editor —*Please send me the formula for and directions for using an ointment containing red blood corpuscles in the treatment of indolent ulcers?*

Henry D Coles M D Chicago

Answer —Many preparations of which the basic component is human red blood cells have been described As good as any is that used by Murray and Shaar (Red Blood Cell Paste in Treatment of Ulcers and Chronically Infected Wounds, J A M A **125** 779 [July 15] 1944) They prepare a red cell paste in the following manner Seventy-five cubic centimeters of 1 1,000 hexylresorcinol solution is placed in a sterile pyrex beaker, 2 5 gm of powdered tragacanth is dusted on the surface, a sterile covering is applied, and it is allowed to stand several hours until a gelatinous mass forms This is then heated in a water bath for 20 min at 100 C After cooling, it is removed from the beaker with a sterile spatula and 30 gm is added to a sterile bottle containing 250 cc of packed red blood cells This is thoroughly mixed and stored at 2 to 5 C After cleansing the wound with isotonic saline and dry gauze, a thin film of the red cell paste is applied with a sterile cotton applicator, allowed to dry, and then covered with a sterile dry dressing The wound is dressed once or twice daily depending on the condition and progress

TETANUS ANTITOXIN AND BURNS

To the Editor —*What is the indication for or against tetanus antitoxin or tetanus toxoid in industrial burn cases for electrical chemical and ordinary burns?*

J M Hesser M.D Benson Ariz

Answer —Currently in much of industry neither tetanus antitoxin nor toxoid is administered after any injury except in special situations This practice applies to burns as well as to other injuries The exceptions derive oftener from the place of the workman's residence rather than the type of work itself When workmen reside on farms or are otherwise around animals antitetanic agents may be administered Workmen such as plumbers, sewer mechanics, and animal handlers customarily are given tetanus antitoxin or toxoid The reason behind this growing tendency against use of these agents is, on the one hand, the low incidence of tetanus in industry, and, on the other, the relatively high frequency of untoward results from the antitoxin in itself In any instance, toxoid would be employed only as a booster injection following known previous administration While these statements are applicable to all industrial injuries, the tendency to make use of tetanus antitoxin or tetanus toxoid is even less in the instance of burns of any nature

FRUIT JUICES AND ATOMIC BURNS

To the Editor —*In the issue of June 2 1951 page 508 there was a question posed with reference to the potassium intake and the treatment of burns Your answer was not entirely satisfactory from all points of view In the early stages of extensive burns the serum potassium concentration may be sufficiently elevated It is unwise, and may even be dangerous to give patients additional potassium at that time When there is any interference with renal function because of diseases of the kidney or secondary to shock syndrome administration of potassium is definitely contraindicated Orange juice contains approximately 200 mg of potassium per 100 cc Grapefruit juice contains approximately 150 mg of potassium in each 100 cc While small amounts could obviously be tolerated by most persons, the excessive uses of these fruit juices, by the allowance of a pitcherful at the bedside leads to the consumption of extraordinarily large amounts of potassium Thus there is the equivalent of 30 milliequivalents in the average quart size pitcher Attention should be drawn to this factor in the treatment of extensive burns of any type, and any evidence of interference with renal function should call for a definite review of the dietary constituents*

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To the Editor —*The answer to the question concerning contraindications to the use of orange and grapefruit juices in the treatment of burns atomic or otherwise because of the high potassium content of these juices was correct However for completeness an addition should be made to the answer referring the questioner to the paper by Rosenthal and Tabor (Electrolyte Changes and Chemotherapy in Experimental Burn and Traumatic Shock and Hemorrhage Arch Surg* **51** *244 [Nov - Dec] 1945) They stated Fruit juices, because of their high potassium content, are definitely harmful in experimental shock An experiment in tourniquet shock demonstrated that 5 per cent body weight of orange juice by mouth was rapidly lethal*

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SEVERE DRYNESS OF MOUTH

To the Editor —*In the discussion of the causes and treatment of Severe Dryness of the Mouth in Queries and Minor Notes June 30 1951, no mention is made of the patient s blood count In the presence of hypochromic anemia mouth dryness and dysphagia may be part of the Plummer Vinson syndrome A careful review of such factors as chronic blood loss or destruction dietary iron deficiency and gastrointestinal inadequacy particularly achlorhydria may reveal both the etiologic and therapeutic factors It should also be pointed out that dryness of the mouth is not infrequently an isolated manifestation of deficiency of one or more components of the vitamin B complex The presence of macrocytosis with normochromia or hypochromia would make this even more likely The diagnostic and therapeutic suggestions made above would apply here also*

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STATUS OF LIVING DIABETICS WITH ONSET UNDER FORTY YEARS OF AGE

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Diabetics are living longer than ever before So many of them after years of the disease present distressing complications[1] that this article has been written to show that the condition of some of our patients in the younger group after a quarter century of the disease warrants optimism

These 760 patients with diabetes of 25 years' or more duration fall into four groups (1) Quarter-Century Victory-Medal diabetics, numbering 23, (2) those with onset in childhood who have survived more than 30 yr , numbering 40, (3) those with onset in childhood who have had the disease between 25 and 30 yr , numbering 181, (4) those whose onset was between the ages of 15 and 40 and who have survived 25 yr or more, numbering 516

QUARTER-CENTURY VICTORY-MEDAL DIABETICS

To date[2] no account has been given of the 23 Quarter-Century Victory-Medal patients Undoubtedly there are many others unrecorded, and I suspect the number will multiply rapidly Thus, a few weeks ago in the Acta Medica Scandinavica in the Odin Festschrift, Martensson[3] mentioned 10 patients free from trouble with the eyes after 25 yr of diabetes, but so far as I am aware no other similar statement has appeared in the literature To find one is a great encouragement The Quarter-Century Victory Medal is awarded by the Advisory Committee of the Diabetic Fund of the Boston Safe Deposit and Trust Company to those who fulfil the following criteria These criteria are simple (1) proof of diabetes of 25 years' duration, (2) a sound body as shown by routine physical examination, with the urine free from albumin, (3) eyes without diabetic complications, such as hemorrhages, exudates, and cataracts, and (4) arteries free from calcification as disclosed by x-rays of the chest, abdominal aorta (lateral view), pelvic arteries, and those of the lower legs between the ankle and knee

Detection of these cases is not so formidable an undertaking as many think It is an easy matter to verify the duration of the diabetes, a simple physical examination of the body (including determination of the blood pressure) with a test for albumin in the urine will narrow the number of candidates This leaves the examination of the eyes to be done, and only if they are perfect will x-ray studies be needful The cases are so rare that specialists often are happy to do these latter examinations without charge

The first announcement to give Quarter-Century Victory Medals to diabetics was made in 1947 It was felt that the histories and original treatment of these patients would disclose the cause for their unusually good condition and a hint for methods of treatment to be employed with new patients

Survival Not Accidental —Chance coincidence by no means accounts for the survival of these healthy quarter-century diabetic veterans The more closely their histories are studied, the more definitely do we get indications why they have lived long and remained in excellent physical condition thus far These 23 patients — and I think it important to add that only nine were our own—lived in unusually favorable homes and under comfortable social circumstances, although I know definitely of but one with sufficient funds to have had the advantage of a private nurse for years Not one of the patients belonged to the underprivileged class Three were from physician's families or had relatives who were physicians, and three later became physicians themselves The physicians who treated them were unusual men, most—but not all—of whom were nationally known as pre-eminent in diabetes Furthermore, as a rule, there had been continuity of care —no medical shopping, no wandering from clinic to clinic

Sex In general occurrence of diabetes is about equally frequent in males and females until the age of 25, but in the Quarter-Century Victory-Medal group females predominated (14 out of 23) I doubt if this is accidental I think the reason there are more females than males in this Quarter-Century Victory-Medal list is the more faithful attention paid to treatment by girls and young women than by boys and young men You can

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Aided by a grant from the Life Insurance Medical Research Fund.
Aided in statistical analysis by the Statistical Department Metropolitan Life Insurance Company

[1] Joslin E. P and Wilson, J L. Lessons for Future Treatment from 472 Fatalities in Diabetic Children Brit. M J 2 1293 (Dec 9) 1950

[2] This paper was read before the Los Angeles Society of Internal Medicine Nov 1 1950

[3] Martensson, J., and Palm E. Ocular Findings in Long Standing Diabetes Mellitus, Acta med scandinav Supp 246 pp 154-165 (June 13) 1950

say to a girl, "Do you want a baby? Have you heard that until 1883 Bouchardat had never seen a pregnant diabetic woman, that until 1937 Dr Priscilla White found that only 56% of our pregnant diabetic women had living children, but that since that date 93% have had living children?" Consequently, when my colleagues and I have a diabetic girl we expose her to the pregnant patients awaiting confinement in the hospital and let her see for herself how cheerful and how immune they are to injections of insulin and hormones and to ingestion orally of iron and vitamins and dozens of ammonium chloride pills for the control of edema, all because of the hope set before them that by so doing they will have healthy living children The diabetes of these pregnant patients is kept well controlled, and the inference is so plain to the diabetic girl that if a pregnant patient can control her diabetes, it surely is possible for a patient who is not pregnant to do so As for the boys, there is no such appeal We do ask "Do you want a job? Do you expect to ask us for a recommendation? Do you think a diabetic who fails to control his diabetes should marry your sister?" Be that as it may, a job to a boy is nothing compared with the lure of a baby to a girl

Heredity In several of Naunyn's originally reported favorable cases, there was a familial history of diabetes For several years when seeing a new patient I was cheered to learn there was a relative with diabetes Later it turned out that the incidence of inherited diabetes was proportional to the period of observation, the group composed of children at onset showing 20% incidence while the group composed of those with diabetes of 20 years' duration showed an incidence of 40% In the 23 Victory-Medal cases, inherited diabetes is present in 13 out of 21 (two unknown), or 62%, which is about as high an incidence as in any group of ours, except among the identical twin group Personally, I think this high incidence of inherited diabetes depends on two circumstances—the long periods of observation and the higher social status of the patients Such a high incidence of hereditary diabetes makes me suspect that a familial history of diabetes would be found for all diabetics if one only knew their ancestry More and more this high incidence points to the universality of the distribution of Naunyn's diabetic tendency

Age The age at onset ranged from 1⅘ yr to 32 yr, but only one was over 23 The earliest year of onset was 1916, no other case occurred until 1919, another in 1920, and five in 1921 The longest duration of a diabetic thus far has been 34 yr At present the youngest diabetic is 27 and the oldest 61 Comparable to the latter is a near-medal diabetic, now 63, whom we all considered in perfect condition, but an ophthalmologist found a single small hemorrhage in one eye Of the 23 Victory-Medal diabetics, 22 live in various parts of the United States and one in Switzerland

Marriage and Offspring These diabetics marry Thus, 17 are married—one later became divorced The six remaining single consist of one man and five women Eleven of the 17 marriages have resulted in 28 living children, all of whom are healthy Obviously, so far as this group is concerned, descendants will be quite limited, and the magnitude of danger from transmission of hereditary diabetes will be small

Program of Treatment For 21 of the 23 medal diabetics this was almost identical The urine was made sugar free by diet or at times even by fasting two days a week, the carbohydrate allowance was restricted for the first three years and often longer to 50 or 75 gm daily, the protein allowance was moderate, and the fat allowance (after freedom from glycosuria) abundant The patient's weight was sacrificed to maintain a normal blood sugar and a sugar-free urine Tests were performed daily, often several times The diet was weighed and was low in carbohydrate and calories, and the patients today look back upon it realizing how unhappy they were and the relief they experienced when insulin was available, although even then for the next few years the diet remained low

In the last 15 yr the diet of all these patients has been liberalized Although the food is not weighed, all agree they know food values, and, except in a few instances in which there is a boasting spirit of exceeding dietary bounds or negligence, it is absolutely plain that the carbohydrate intake is restricted and is more often less than over 200 gm daily All shun excess weight, and even the patient claiming the greatest dietary freedom acknowledges in the same breath that insulin is administered according to the urine tests, frequently made thrice daily

TABLE 1 —*Age at Onset and Present Age of Twenty Three Victory Medal Diabetics*

Age at Onset Yr	No of Diabetics	Present Age Yr			
		25-34	35-44	45-54	55-64
Under 5	2	2			
5-9	2		2		
10 14	5		5		
15-19	10		8	2	
20-24	3			2	1
30-34	1				1
Total	23	2	15	4	2

Facts regarding the medal diabetics are summarized in Table 2 Unfortunately, some of these data are indefinite because either the patients were so young at onset or their physicians have died Although only four of these patients ever went into coma, it is clearly evident from the histories that all fell into the severe diabetes group, and, in fact, of the 20 my colleagues and I have classed as having severe diabetes, the average insulin dosage now for 18 is 50 units

So too about diet There is no question about its Spartan character at the onset and for two or three years thereafter for at least 17 of the 23 diabetics The interval between onset and the beginning of insulin therapy was more than two years for six patients This does not necessarily mean that they had mild diabetes at onset because several of these patients were under the strictest dietetic control, this also applies to two of the three patients in whom the interval between onset and the beginning of insulin therapy was over four years

All of these 23 patients are taking insulin, but I am in doubt about the number of units taken by three For the remaining 20, the 24-hr quantity of insulin ranges from 12 to 100 units Two patients take between 20 and 30 units, three between 30 and 40, eight between 40 and 50, one between 50 and 60, two between 60 and 80, and four between 80 and 100 in 24 hr I think the three practicing physicians are those who take the most insulin

Medal Diabetics Are Symptomless—They are free from complications, they have no complaints They do not even have neuritis I just hope they will not forget they have diabetes and am thankful they must be pricked each day as a reminder they are vulnerable There is always more worry over the patient who is allowed to give up insulin than over the one who takes it The soul of Frederick M Allen, who in and out of season has preached that diabetes is not progressive, should be cheered He did so much for me and my patients in the dark preinsulin period that it is a great satisfaction to lay these medal cases at his feet as a tribute to his prophetic insight

Details of a few of the individual medal cases are given below

REPORT OF CASES

TABLE 2—*Data on Victory Medal Diabetics*

Year of onset	1919-1925	
Age at onset yr	1 4/5-32	
Sex—Females	14	
Males	9	
No with inherited diabetes	18	
Degree of diabetes—Severe	20	
Mild	3	
No on rigorous diet at onset usually including fasting	17	
Interval between onset and beginning of insulin therapy		
Within 1 week	4	23
1-3 mo	4	
4-6 mo	3	
1 yr	3	
2 yr	3	
4 yr	2	
5 yr	1	
6 yr	2	
Unknown	1	
Present insulin dose units	12-100 (48 average of 21 patients)	
Marital status—Married	17	
Single	5	
Divorced	1	
No of offspring	28	
No actively working at home or in business	22	

CASE 1—It would be relatively easy to explain why a diabetic could be a Quarter Century Victory-Medal case if all the 23 cases were of similar pattern to the first in the series This patient's diabetes began in April, 1920, at the age of 14 3/5, it was diagnosed in July of that year when a blood sugar of 333 mg was revealed The patient was made sugar free at St Luke's Hospital, New York, and remained so except for six occasions prior to coming to us in November 1921, when the urine was sugar free and the blood sugar two hours after ingestion of food 170 mg His daily diet was 50 gm of carbohydrate, 90 gm of protein, and 75 gm of fat, but later even with insulin therapy the daily diet was only 56 gm of carbohydrate, 63 gm of protein, and 150 gm of fat At the end of 1924 the carbohydrate allowance was 79 gm, the protein 62 gm, and the fat 140 gm The blood sugar was 130 mg after fasting, 120 mg at noon, and 180 mg later in the day From 1925 to 1926 there were no material changes in the diet, the daily dose of insulin was 46 units In 1927 the daily carbohydrate allowance was 95 gm. In 1930 the daily diet allowance was 115 gm of carbohydrate, 75 gm of protein, and 140 gm of fat. As late as 1937 the daily carbohydrate allowance was only 125 gm the protein 90 gm., and the fat 120 gm The patient weighed 158 lb (71 7 kg) and took insulin three times a day in doses of 25, 7, and 25 units respectively In 1940 the daily carbohydrate allowance was 140 gm, and at present the daily diet allowance is approximately 180 gm of carbohydrate, 100 gm of protein and 115 gm of fat. The patient now weighs 158 lb

This patient for the first seven years had perhaps our best trained diabetes nurse never was known to break diet, and lived actively On weekends he flew his own airplane alone with his nurse from New Jersey to Cape Cod He wandered over the world and was perhaps our first patient deliberately to reduce his insulin intake in anticipation of exercise, such as playing tennis in the Bois de Boulogne in Paris Later this patient was again wonderfully fortunate in marrying a young woman who spent months in learning how to care for him Since this time he has been most active in a large business, in 1935 he told me he had only missed five and a half days from work in many years He has three healthy children This man is 6 ft 2½ in (189 cm) tall and weighs 154+ lb (69.9 kg) dressed He was in such abounding health that he received unanimous applause in 1947 at a meeting of the Association of Life Insurance Medical Directors of the United States and Canada. In 1946 in a railroad accident in which many were injured, he suffered fractures of eight ribs, the scapula, and the radius, but his surgeon at Roosevelt Hospital at the end of a month said his recovery was as rapid as that of a nondiabetic This man had not only everything that money could buy to protect him but also a wonderful family friends, and his own character and zeal to make life successful

CASE 2—A somewhat similar case is that of a conscientious girl whose age at onset in March, 1922, was 14 1/10 yr and whose devoted, highly educated, and meticulous parents helped her supervise her diabetes for 27 yr until her marriage She was seen more frequently by us than any of our other medal diabetics, and the control of the diabetes is shown by her blood sugar values, which ranged close to reaction levels and only on the rarest occasions rose above 230 mg in over 20 yr The original diet was a daily allowance of 95 to 118 gm of carbohydrate, 70 gm of protein, and 106 to 150 gm of fat Her daily insulin dose is now 37 units

CASE 3—In this patient diabetes developed in 1921 when the patient was nine years old A daily diet of 54 gm of carbohydrate, 66 gm of protein, and 42 gm of fat was prescribed The patient was maintained on approximately this diet for several years The insulin dose at present is 36 to 44 units daily

CASE 4—Illustrations of the strenuousness of the diet are furnished by this case Onset of diabetes occurred in January, 1923, when the patient was 1 4/5 yr Even with the use of insulin in 1926, the patient, while weighing 39 lb (17 7 kg), ate only 45 gm of carbohydrate, 46 gm of protein, and 90 gm of fat daily In 1949 the daily insulin dosage was 30 units of regular insulin plus 10 units of globin in the morning and 20 units of regular insulin plus 20 units of globin in the evening

CASE 10—This patient's age at onset in 1924 was 9 4/5 yr His diet was more than strict, he ate washed bran, lean meat, branwafers, and 'tons of vegetables" He grew little and had insulin reactions while on the very low diet Urine tests were made two to three times daily, and in the early years every bit of food was weighed on a gram scale His present insulin dose is 88 to 93 units daily Upon the basis of his being a Victory-Medal diabetic, I successfully pleaded with the government to allow him to retain a Federal position

CASE 11—This patient's age at onset in 1921 was 32 She evidently had a mild case of diabetes, and her diet was not as rigid as those heretofore described She is an example of the many diabetics who by faithful adherence to treatment should easily earn a Victory Medal Her daily insulin dose is now 20 units

CASE 12—This patient's age at onset in 1923 was 15 3/10 yr She was on a most rigid diet for three years At the end of three years her daily carbohydrate allowance had been raised to between 60 and 75 gm The patient cannot remember eating any portion of food which weighed over 3 oz. (90 gm)

CASE 13—This patient's age at onset in 1923 was 15 yr A very strenuous diet was prescribed at the start He was the first person in New Mexico to use insulin His insulin dose at present is 72± units daily

CASE 17—Diabetes developed in this patient in 1923, when she was 18 A fairly strict diet was prescribed, the daily carbohydrate allowance being 50 gm, the protein 70 gm, and the fat 150 gm for many years except when her weight went up and the fat allowance was restricted to 50 gm. daily The patient took her diabetic life most seriously and was much disturbed if sugar ever appeared in her urine She made every effort to keep her urine sugar free Her present insulin dose is 48 units daily

DIABETICS WITH DIABETES OF THIRTY YEARS' DURATION WITH ONSET IN CHILDHOOD

Corroborative testimony that diabetics are living long and—most of them—useful lives is afforded by 40 of our patients with diabetes of 30 to 35 years' duration whose onset was in childhood Only one of them, so far as my colleagues and I are aware, is a Victory-Medal patient, but 33 are working steadily Of the remaining seven, one is temporarily out of work, one is a manic depressive, two are incapacitated, and details about three are wanting Of this group is a man whose age at onset in July, 1920, was 14⅘ yr He is at present head of the Parent-Teachers' Association, the Boy Scouts, and President of the Crippled Children Scouts in his locality Another patient was the only child to have survived coma before the discovery of insulin, and another was the first child to have received insulin at our own hands

Twenty-three of the 40 patients are men and 17 are women The incidence of hereditary diabetes is again prominent in this group—62% Thirty-one of the 40 have married, resulting thus far in 41 children in 21 families, of whom nine are in Dr Priscilla White's pregnancy series Of all our women, only two have had as many as four living children, and the number who have borne living children after 25 yr of diabetes can be counted on the fingers of one hand My colleagues and I know of only two divorcees in this group, one man and one woman, although the man subsequently remarried

Calcification of the arteries as shown by x-ray examinations, from a slight trace to a 4 + reading for 22 patients (or 63%), was found in the 35 in whom this complication was sought. The eyes of 30 have been examined by accredited ophthalmologists Nineteen showed arteriosclerosis of the vessels of the retina, 17 were found to have retinal hemorrhages In 13 of the latter, exudates were also found, and five have retinitis proliferans Only one patient, however, can be said to be incapacitated because of the eyes None is blind In one patient with retinitis proliferans coronary cataracts also developed Of the 10 patients whose eyes were not examined, one is reported by his local doctor as "having early retinitis" One has written that he has a "hemorrhage in the right eye," and one is taking rutin "because of trouble with his eyes," which suggests that of the 40 patients some degree of diabetic involvement of the eyes has developed in a probable 33 (or 82%) I would emphasize that 18% may have good eyes, just as my colleagues and I found this to hold for the 23 medal diabetics Even if there was only one with eyes intact, I would be encouraged There must always be a beginning in any series

High blood pressure, ranging from minimal readings of 145/80 to 210/110, was found in 15 (37%) of the entire group, and 10 patients (25%) have shown varying degrees of albuminuria from 50 to 1,000 mg per 100 cc , but I am happy to add that of the 13 patients tested within the past year, five were still free from any trace of albumin in the urine Up to this year tuberculosis had developed in none of the 40 patients This month x-rays of another patient have shown a questionable shadow in one lung, but as yet there has been no definite diagnosis of tuberculosis Epilepsy was diagnosed in but one instance

The rigidity of treatment in the early years is illustrated by a girl who weighed 46 lb (20 9 kg) in 1923, when she was 14⅘ yr Despite this undernutrition, by 1947 her weight was 142 lb (64 4 kg), and she writes that her son, born years after onset of her diabetes, weighs 135 lb (61 2 kg) and is 5 ft 7½ in (171 cm) tall

DIABETICS WITH DIABETES OF TWENTY-FIVE YEARS' DURATION WITH ONSET IN CHILDHOOD

This group includes 181 patients who already have had diabetes for 25 to 30 yr Of these, 81 are men and 100 women One hundred and twenty-six are married, of which 53 are men and 73 women Two of the women have married twice and one three times Three we learn have been divorced Eighty of these 181 patients so far have 111 living children, and several are "expecting" Four have adopted children Indeed, we have one diabetic mother who, losing her own child, adopted the illegitimate child of another of our diabetics

Eyes—Various data about the eyes, presence of albumin in the urine, blood pressure, and condition of the arteries are given below These data were not synchronously obtained, but they give a hint as to the general picture Of the 114 examined by ophthalmologists, arteriosclerosis of the retinal vessels was found in 56 (49%) and retinal hemorrhages in 57 (50%), 23 of the latter also showed exudates Seventeen patients have retinitis proliferans, and in six cataracts have developed Four patients are almost or entirely blind, three are blind in one eye, one is reported to have extensive detachment of the retina, and one is temporarily unable to work because of retinal hemorrhages

Albuminuria has been recognized in values ranging from 50 to 1,020 mg per 100 cc in 32 (18%) of the 181 patients However, many have not been examined recently This is in marked contrast to the figure of 51%, which represents the proportion of deaths from kidney trouble among our 135 deaths among juveniles between 1944 and January, 1950 The blood pressure of 61 (34%) has shown readings of 145/80 or above Arteriosclerosis has been discovered in 71 (59%) of the 121 patients examined by x-ray

Psychological difficulties of sufficient severity to require treatment, ranging from anxiety neurosis to acute reactive depression necessitating electric-shock therapy, have developed in 11 of the 181 patients In addition, two patients have become psychotic, requiring institutional care One of these even received the Victory Medal One patient is suspected of having petit mal, and one patient reports having been operated upon for epilepsy Pulmonary tuberculosis was found in five patients

Four of the 181 have received the Victory Medal, and several are now being considered as possible future recipients of the honor Five in the group are successful practicing physicians, and one patient is presently employed as head nurse on the delivery floor of a nationally famous hospital

DIABETICS WITH DIABETES OF TWENTY-FIVE YEARS' DURATION WITH ONSET BETWEEN FIFTEEN AND FORTY YEARS

There are 516 of these patients One hundred and eighty-eight had treatment with us before our first patient received insulin, Aug 7, 1922, and another 118 fell into our hands before 1926 The remaining 210 patients received treatment elsewhere before my colleagues and I saw them

Sex—In this group there are 273 men and 243 women

Race—Among all our patients 16 2% are Jewish, and among these 516 quarter-century diabetics the percentage was essentially the same—18%

Heredity—The incidence of hereditary diabetes here as in all long-duration diabetes groups was high, namely, 44%, among the men it was 32% and among the women, 53% (as usual higher) So marked a divergence between the sexes in the incidence of hereditary diabetes I do not remember having encountered before

Marriage—Only 42 of the 273 men and 31 of the 243 women were single Seventy-nine per cent, or 410, were married Eight of the 516 had been divorced

What is the present status of these 516 diabetics whose onset was between the ages of 15 and 40 with 25 yr of diabetes behind them? Information was sought for nine items from the records and letters later received from patients and physicians (1) use of insulin, (2) whether the patient is working or active at home, (3) presence of albumin in the urine, (4) presence of high blood pressure, (5) condition of the eyes, (6) whether amputation of an extremity had been done, (7) manifest presence of arteriosclerosis, (8) presence of cardiac disease, and (9) presence of cerebral involvement Data were missing in many of these categories Consequently, it was decided to report upon only those diabetics for whom we had definite knowledge of at least six of these nine topics Data regarding 63 of the patients seen earliest in the series and 41 seen latest were analyzed

Present Status—It is apparent that practically all of the patients are taking insulin—98 4% and 92 7% of the two groups respectively Approximately 80% are active, although they are far above the age of 40, and their ages now range up to 65 or more Albuminuria was reported in about 20% but a high blood pressure or involvement of the eyes in about 50%, with fully two-thirds of these showing arteriosclerosis Heart disease was seen in slightly more than 25%, but only four patients had histories indicating cerebral involvement Only nine of the 104 whose cases were analyzed had an amputation of an extremity

SUMMARY

Such is the condition of our 25-yr -duration diabetics A few are perfect, and approximately 80% are active The patients in perfect condition are those whose treatment was initiated (with hardly an exception) with strenuous control of the diabetes in their early years, this control being maintained for 10 yr , more or less, to more than the usual extent and even then continued As in Dr Priscilla White's[4] series of children's cases, as in the youthful cases reported by Root, Sinden, and Zanca,[5] and as in the 247 cases recently studied and soon to be published by Root, Wilson, and Marble,[6] so in this series the evidence is overwhelming that strict treatment of diabetes pays and, moreover, that control of the disease is possible I grant that the life of a diabetic child or young adult even today is no flowery bed of ease I acknowledge that tuberculosis, coma, and renal disease are far too frequent in young diabetics, but I think one is justified in saying that in a diabetic arteriosclerosis need not be premature

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[4] White P and Waskow E Arteriosclerosis in Childhood Diabetes Proc Am Diabetes A 8 139 151 1948

[5] Root H F Sinden R. H and Zanca R Factors in the Rate of Development of Vascular Lesions in the Kidneys Retinae and Peripheral Vessels of the Youthful Diabetic Am J Digest. Dis 17 179 186 1950

[6] Wilson J L. Root H F and Marble A Prevention of Degenerative Vascular Lesions in Young Patients by Control of Diabetes Am J M Sc 221 479-489 1951

PNEUMOCOCCIC MENINGITIS IN INFANTS AND CHILDREN

COMBINED THERAPY USING PENICILLIN AND SULFONAMIDE

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The steady advance in therapy in the past decade with the introduction of new chemotherapeutic agents and the antibiotics has dramatically influenced the fatality rate of pneumococcic meningitis It is now a question of not only which agent or combination of agents to use, but also of how each agent can most effectively be applied In the treatment of meningitis, especially, the known irritation and possible danger of intrathecal medication must be weighed against the seeming necessity for its use in a usually fatal disease

Penicillin was first used on the Children's Service at Bellevue Hospital in the treatment of pneumococcic meningitis in May, 1943 The following report will concern itself with patients seen only since this time Fifteen infants and children were treated between May, 1943, and December, 1949

Pneumococcic meningitis was almost universally fatal before penicillin and sulfonamide therapy Rarely did a child survive Of 150 patients from the Harriet Lane Home, Baltimore, as reported by Waring and Smith [1] in 1944, there were no recoveries The disease was almost

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Tables 2 and 3 have been omitted owing to lack of space They are included in the reprints

[1] Waring, A J Jr and Smith M. H D Combined Penicillin and Sulfonamide Therapy in the Treatment of Pneumococcic Meningitis J A M A 126 418 (Oct 14) 1944

invariably fatal at the Children's Hospital, Washington, D C, where Ross and Burke[2] described one recovery in 66 patients All of the 157 patients observed by Toomey and Roach[3] succumbed, as did those in our own experience prior to 1943

The use of sulfonamides changed the fatal outlook slightly, as illustrated in the series of Waring and Smith[1] with one recovery out of 17 The combined use of antipneumococcus serum and sulfonamide further improved the prognosis Ross and Burke[2] reported 10 recoveries in 38 cases, and Sweet and his associates[4] described three survivals out of a group of 40 patients, one-half of whom received both sulfonamide and type-specific antiserum Combining the results reported from other institutions with those in Children's Hospital, Ross and Burke found that the fatality rate using both agents was still high, ranging from 58 to 70% Dowling[5] had four recoveries in 72 cases

The addition of penicillin to the therapy of pneumococcic meningitis introduced the new era in the prognosis of this disease Using penicillin alone, Sweet and co-workers[4] reported seven recoveries in 16 patients

The purpose of this study is to give the excellent results using the combined therapy, sulfonamides and penicillin, in 15 consecutive patients Fourteen recovered from the acute infection, and only one of these had residua The 15th patient was moribund on admission and died 27 hr later

MATERIAL

All patients with pneumococcic meningitis seen on the Children's Medical Service, Bellevue Hospital, between May, 1943, and December, 1949, are here reported They were treated with penicillin and sulfadiazine as well The ages of the patients ranged from 4 weeks to 11 yr, nine being well under 1 yr of age, and seven were under 6 mo It is significant that recovery without residua was obtained in two babies under 6 weeks of age treated, and in a third, who was a premature baby, weighing 8 lb 12 oz (4 kg) and being 4 mo of age at the time of infection Thirteen of the 15 cases were observed from October through May, coinciding in seasonal incidence with the period cited by Ross and Burke[2] in their more extensive series of 64 cases

CLINICAL FINDINGS

Twelve of the 15 patients were seen early in the course of the disease, from six hours to two days after onset One of these was admitted with a febrile illness of only one day and evidence of meningitis developed 48 hr after admission to the hospital On the other hand, one infant, who was first seen late in the disease, had a febrile illness of two to three weeks, with clinical signs of meningitis for at least five days previous to admission Hydrocephalus in this patient developed and he died nine months after the infection with meningitis

Although most of these patients were seen early, the diagnosis of meningitis usually was made readily on admission Of the 15 patients, 11 had obvious signs leading to the immediate diagnosis of meningitis A stiff neck had been found in five of these before admission to the hospital and three others had convulsions There were four, however, in whom the diagnosis was elusive Two patients were first admitted to other services, one to surgery and one to otolaryngology, because of swelling below the left ear following a long-lasting respiratory disease In both instances the diagnosis of pneumococcic meningitis was established 24 hr later

The difficulty of diagnosing pneumococcic meningitis in young infants must be emphasized, and the consequent later diagnoses may in part account for the higher fatality rate in this age group Neurological signs may be absent early in the disease Cases 3 and 14 were particularly instructive in this respect Both infants were brought to the hospital because of convulsions and fever and hence were examined carefully for signs of meningitis In Case 3 neurological signs were not found until eight hours after admission, even though the spinal fluid on admission was turbid and clearly indicated a meningeal infection In Case 14 the problem was even more difficult Repeated neurological examinations were negative, and since the spinal fluid was clear and its chemistry was normal, a diagnosis of meningitis could not be made until a positive spinal fluid culture for Pneumococcus Type VI was obtained 20 hr later At this time a second spinal tap revealed a purulent fluid with marked cellular reaction Here, then, was an infant with extensive bacteremia and bacterial invasion of the spinal fluid producing repeated convulsions without associated neurological signs

One month later a newborn infant, Case 15, was seen with a somewhat similar history of convulsions and fever, but of longer duration Again, a neurological examination was negative and the fontanel was flat, but the spinal fluid was cloudy and contained some cellular reaction A smear of this fluid showed numerous gram-positive diplococci Here, again, there was obviously extensive bacterial invasion of the spinal fluid, probably early, which would not have been diagnosed without the aid of the spinal fluid studies

Physical examination alone is often deceptive and cannot be relied on for a diagnosis of pneumococcic meningitis in young infants The commonest finding in infants under a year was a bulging fontanel, which was discovered in six of the nine infants in this series

Meningitis developed under observation in Case 8, in whom the first study of the cerebrospinal fluid indicated a serous meningitis, i e, negative culture and a mild lymphocytic cellular reaction The second cerebrospinal fluid specimen, obtained 24 hr later, showed an increased cellular reaction of polymorphonuclear cells and a positive culture for Pneumococcus Type XX In this instance a slightly stiff neck without any other neurological findings was observed on first examination

The neurological examination alone was adequate to diagnose meningitis in 10 of the 15 patients either because of a stiff neck, Brudzinski sign, ankle clonus, or spasticity

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[2] Ross, S and Burke F G Pneumococcal Meningitis in Infants and Children A Report on the Use of Combined Sulfonamide and Penicillin Therapy J Pediat. **29** 737 1946

[3] Toomey J A and Roach F E Pneumococcic Meningitis Ohio State M J **35** 841 1939

[4] Sweet, L. K Dumoff Stanley, E. Dowling, H F and Lipper M H The Treatment of Pneumococcic Meningitis with Penicillin J A M A **127** 263 (Feb 3) 1945

[5] Dowling H F Dauer C C Feldman H A and Hartman C R. Pneumococcal Meningitis A Study of 72 Cases New England J Med **226** 1015 1942

In all 15 cases pneumococci were grown from the spinal fluid and typed Direct smears from the spinal fluid are of real value in guiding the immediate therapy and should be done always Attention to morphology as well as reactions to gram-staining will help prevent the occasional error in staining technique In Case 15 in this series a smear of the spinal fluid showed abundant gram-positive organisms far out of proportion to that expected with the low cellular reaction in the spinal fluid

Eleven patients had positive blood cultures In one of these the first blood culture taken together with the simultaneous spinal fluid was sterile, however, for the next three successive days pneumococci were grown from the blood stream In the remaining four patients the blood cultures remained sterile

Nose and throat cultures were taken on 12 patients, and, from 10 of these, pneumococci were cultured which, when typed, were found to be the same type as that in the spinal fluid

In all patients an effort was made to locate the focus for the pneumococcic infection X-rays of the chest were taken on all patients, and, when indicated, mastoid and sinus x-rays as well There were 10 patients in whom a focus was found either by physical examination or by study of x-rays In two of these, purulent otitis media alone was found, in another two there was x-ray evidence of infection in the maxillary sinuses and in the mastoids —one of the latter patients also had pneumonia Only two infants had pneumonia clinically, one diagnosed by x-ray evidence alone, and clinical signs of bronchopneumonia developing in the second shortly after admission In a third infant, Case 15, early lobular pneumonia, apparently not the focus for the meningitis, was found only at autopsy

THERAPY

As soon as the diagnosis of meningitis was established, all patients were given penicillin intramuscularly and sulfadiazine orally, the latter usually in dosages of 1½ grains (0 10 gm) per pound of body weight. Fourteen of the 15 patients received intrathecal penicillin as well, although three of these had only one such treatment given in the beginning of the disease In two desperately ill patients, specific antipneumococcus serum was also given In one of these, Case 9, heparin was administered intrathecally on three occasions, as suggested by Ross and Burke [2] for the prevention of adhesions that might obstruct the flow of the cerebrospinal fluid between the ventricles and subarachnoid space (In the future streptodornase and streptokinase might be employed for this purpose) Though desperately ill, this patient survived the acute infection, but was left with severe central nervous system damage and died nine months later

Intrathecal therapy with penicillin was used as soon as the diagnosis was confirmed bacteriologically in 14 of the 15 patients and was continued in 10 of these until the fluid was sterile There was considerable variation in the amount and duration of intrathecal penicillin therapy Clinical judgment is important in guiding the therapy, taking into consideration such factors as the age of the patient, duration of illness prior to beginning treatment, and severity of infection In this series the single dose of intrathecal penicillin has varied from 5 to 20,000 units in all except Case 6 Lately, we have usually given 10,000 units to children and 5,000 or less to infants, per day

Equally important with the dosage of penicillin is the number of intrathecal injections both as regards meningeal irritation, sensitivity reactions to the antibiotic, and efficacy of therapy Of the 15 patients in this series, only three were treated intrathecally longer than six days An average of five intrathecal treatments with penicillin was given to 11 patients, five of these had three or less injections The patients described by Hutchins and Davies [6] averaged 11 intrathecal treatments with some patients receiving two to three treatments a day, and those of Ross and Burke [2] averaged six treatments The fatality rate of these two series is higher than that of the present report, being five patients of 14, and three of 19, respectively Appelbaum, Nelson, and Albin [7] more recently suggested three to five injections The fatality rate in their series was 18 2% for 44 patients under 11 yr There are many factors influencing fatality, but it is suggested that more intrathecal treatment did not give a better prognosis

Particularly significant as regards intrathecal therapy is Case 7, a 4-week-old infant whose spinal fluid could only be removed by negative pressure because of the abundance of thick purulent exudate Because of mechanical difficulties no more than two small intrathecal injections of penicillin of 2,000 units each could be given, and yet the patient recovered

RESULTS

Fourteen patients recovered from their pneumococcic infection, in one hydrocephalus developed and he died nine months later Two of the cured patients were 1 mo and 6 weeks of age, respectively, at the time of the infection One infant of 42 days was moribund on admission and died 24 hr later There were nine patients under 1 yr of age

A follow-up study of all patients surviving was made at intervals ranging from six months to five years after the infection All patients were well and manifested no residua attributable to the pneumococcic infection One child, however, had a reading disability, and a second had a severe behavior problem, probably resulting from infantile hydrocephalus which had existed for many years before the pneumococcic meningitis Electroencephalography was not done in these patients

COMMENT

The change in the almost universally fatal prognosis of pneumococcic meningitis with the use of combined therapy, penicillin and a sulfonamide, is most impressive Analysis of the cases from the literature revealed that of 158 children treated with this combined therapy, 128 (81 0%) lived

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[6] Hutchins G and Davies, J A V Penicillin Treatment of Pneumococcus Meningitis in Infants J Pediat 27:505 1945

[7] Appelbaum E. Nelson J., and Albin M B The Treatment of Pneumococcic Meningitis with Penicillin, Am J M. Sc 218:260 1949

Of the nine patients in this series under 1 yr of age, all except two were admitted to the hospital within 48 hr of onset of the disease These two were the ones who failed to recover promptly, one dying within 27 hr and hydrocephalus developing in the other who died nine months later

An analysis of the prognosis in our series with regard to age of the patient and duration of the disease prior to treatment was made Clearly, patients seen late in the disease have a poorer prognosis, the two patients who failed to respond were seen after the fourth day of disease and both were under 1 yr of age

A composite study of pneumococcic meningitis as reported in the literature with reference to prognosis and duration of disease at the time of treatment was made The fatality rate of patients treated not later than the first 72 hr (42 cases) is 11 9% Thereafter the chances of recovery decrease in proportion to the length of time of the disease before treatment is begun For all cases studied, 105, the fatality rate was 24 8%, whereas for the 33 treated after the fifth day of disease, 42 4% died

Although in the small series here presented the results were highly satisfactory, the question arises as to whether the same success might be achieved with less strenuous therapy Is intrathecal therapy necessary? One patient in our series demonstrated the possibility of complete recovery without it

The danger of intrathecal therapy with any form of foreign material is well known Three of our patients had convulsions from one to four hours after intrathecal penicillin was given Only one of these had had convulsions previous to intrathecal therapy, but this child continued to have severe convulsions after each intrathecal treatment This irritative effect of antibiotics on the central nervous system has been previously noted Reuling and Cramer[8] report a case of convulsions in an adult patient receiving 500,000 units of penicillin This patient recovered, however, without sequelae Johnson and Walker[9] report one case showing convulsions after a massive treatment, receiving 100,000 units intramuscularly in an infant Other observers[10] also report reactions which are thought to be due to the penicillin itself, either because of impurities or because of excessive dosages of the antibiotic

Appelbaum, Nelson, and Albin[12] indicate reactions such as arachnoiditis, convulsions, and pyrexia in a small group They suggest that cerebral irritation may be in part associated with large doses of the antibiotic intrathecally

Cairns and others[11] found early in their study that with the use of impure preparations for intraventricular injections there were frequent mild reactions, such as patchy erythema of the skin, trunk, and limbs, generalized sweating, intermittent goose flesh, rise in pulse rate, and sometimes vomiting All of these symptoms usually cleared within from 10 to 20 minutes In Cairns series, palsy and dysphagia were also observed after the intraventricular route Waring and Smith[1] report a case of bilateral optic atrophy, and Appelbaum,[12] a case of transverse myelopathy following intrathecal penicillin

The possible harmful effect of intrathecal medication was well understood even before the era of chemotherapy This point has been repeatedly emphasized by Hoyne, who demonstrated that meningococcic meningitis may be even more effectively treated without intra-

TABLE 1 —*Outcome of Pneumococcic Meningitis in Relation to Treatment*

		Penicillin						
		Intrathecal		Intramuscular		Sulfadiazine by Mouth		
Age	Duration Before Admission	Number of Treatments	Total Dose Units	Total Dose Million Units	Duration in Days	Total Dose, Gm	Duration in Days	Outcome
				Age Group Under One Year				
1 mo	6 hr	2	4 000	10.8	23	6	16	Recovered
1 mo	12 hr	1	10 000	12 6	17	40	20	Recovered
1½ mo	1 day	0	0	0 4	6	38	25	Recovered
5 mo	1 day	?	?	0 7	6	5	4	Recovered
8 mo	1 day	6	35 000	25 6	19	13	17	Recovered
4 mo	2 days	18	330 000	13 9	46	25	42	Recovered
1½ mo	4-6 days	1	5 000	1.8	1	1.5	1	Died
10 mo	5 days	10	100 000	11	12	23	16	Brain atrophy
11 mo	2 days	3	15 000	8 7	21	23	21	Recovered
Years				Age Group Over One Year				
6	1 day	5	100 000	8.2	6	50	19	Recovered
7	1 day	1	10 000	90 (0 2 iv)	5	6	3	Recovered
11	1½ days	8	105 000	5.5	21	69	15	Recovered
7	2 days	5	50 000	0 7	9	1	1	Recovered
8	2 days	4	70 000	24.3	21	49	16	Recovered
9	2-4 days	3	30 000	288	12	34	8	Recovered

* Patient died 9 months later

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[8] Reuling J R and Cramer C Intrathecal Penicillin J A M A 134: 16 (May 3) 1947

[9] Johnson H C and Walker A E Intraventricular Penicillin Note of Warning J A M A 127 217 (Jan 27) 1945

[10] Walker E A Johnson H C and Kollros J J Penicillin Convulsions Surg Gynec & Obst 81 692 1945 Neyman C A in discussion on Johnson H C Walker E A and Case T J Effects of Penicillin on Central Nervous System Arch Neurol & Psychiat. 54 160 (Aug) 1945

[11] Cairns H Duthie E S Lewin W S and Smith H V Pneumococcal Meningitis Treated with Penicillin Lancet 1 655 1944

[12] Appelbaum, E. and Nelson J Penicillin in the Treatment of Pneumococcic Meningitis J A M A 128 778 (July 14) 1945

thecal medication [13] both as regards more rapid recovery and the development of fewer complications Recently he has indicated that similar favorable results may be obtained in influenzal meningitis [14] Rosenberg and Sylvester [15] have shown that during the period of infection of the meninges, the membranes may become permeable to the antibiotics, even though during health this relation may not hold Such observations should favor the intramuscular mode of therapy and give support to withholding intrathecal therapy in many instances

Many cases of residual spasticity and mental deficiency in the cured cases of meningitis using intrathecal therapy have been reported [16] Some of these residua may be in part attributed to the disease, as it is characterized by a more abundant fibrin exudation than other varieties of acute bacterial meningitis The tendency to adhesive arachnoiditis in pneumococcic meningitis is well known Because of this subarachnoid block and the resulting hydrocephalus, relapse of the infection is not an uncommon sequela

Only one of our patients, Case 6, a premature infant weighing under 9 lb (4 kg) at 4 mo of age, had a relapse This infant had seven intrathecal injections of penicillin, and for three days of this period the patient appeared clinically cured The cultures were negative, the spinal fluid chemistry was normal, and the cell count was below 40 cells Four days after discontinuance of intrathecal therapy, pneumococci were again grown from the spinal fluid, and a fall in spinal fluid sugar and an increase in spinal fluid cells were noted, together with a recurrence of signs and symptoms suggesting meningitis Treatment was reinstituted immediately A focus for the relapse was discovered in the right mastoid Antrotomy on the right was effective in removing the focus, and prompt recovery followed

It would appear from both a study of the cases reported in the literature and the observations of Hoyne [14] that a contributing factor to the severity of the sequelae is the amount of intrathecal therapy in terms of the number of intraspinal injections and total dosage of the antibiotic However, since the severely ill patients receive more intense therapy, conclusions are difficult as regards the amount of therapy Certainly patients seen early in the disease might best be treated with intensive intramuscular penicillin, and perhaps intravenous penicillin as well, together with sulfonamides without intrathecal therapy In support of this argument is the recent report of Dowling, Sweet, and co-workers [17] on 21 patients, children and adults with pneumococcic meningitis, with a recovery of 13 (62%) Eighteen of these 21 patients were treated without intrathecal penicillin, the antibiotic being given in large amounts intramuscularly In these cases the spinal fluid level of penicillin eight hours after intramuscular medication ranged from 08 to 1 25 units per cubic centimeter

A statistical comparison of the fatality rate of patients reported in the literature treated with penicillin by the intramuscular route alone as compared with combined routes, intramuscular and intrathecal, is 31 4% and 20 8%, respectively [18] When corrected for fatalities occurring within the first 24 hr of treatment, there is no significant difference in the two groups The insistence on the necessity for intrathecal penicillin therapy is not warranted by these figures It may be that the severely ill patients are more likely to be treated with intrathecal medication, and thus the group with intramuscular therapy alone may contain more moderately and mildly ill patients It is our opinion that intrathecal therapy is indicated when the factors influencing prognosis are unfavorable

It is generally agreed that the younger the infant, the less favorable the prognosis becomes, and that recovery in newborn infants is unusual In 1945 Hogg and Bradley [19] reported the recovery of one patient with pneumococcic meningitis in the neonatal period treated with sulfadiazine alone They reviewed the literature and found in 28 cases only two other recoveries, described by Ravenel [20] and Uhr,[21] both cases having been treated by repeated spinal drainage only, thus giving a total of three recoveries in the newborn period Ravenel's case of pneumococcic meningitis was diagnosed entirely from the finding on smears of gram-positive organisms in the spinal fluid, the diagnosis was not confirmed by cultures Pneumococci were cultured from the spinal fluid in the case reported by Uhr in 1929 Recovery of a newborn infant with pneumococcic meningitis using penicillin was reported in 1947 by Cohlan and Solomon [22] This 25-day-old infant was treated with penicillin, intrathecally on four occasions, intravenously for four days, and intramuscularly over a long period of time, together with sulfadiazine The infant was cured and had no residua when seen at 20 mo of age Two separate reports in the French literature in 1947 each described newborn infants, 2 days [23] and 7 days [24] of age, who recovered promptly following combined sulfonamide and penicillin therapy, the latter drug given both intrathecally and intramuscularly We are adding a seventh case of recovery from pneumococcic meningitis in the newborn period, an infant who although only 4 weeks of age was cured with only 4,000 units of intrathecal penicillin, the antibiotic being given intramuscularly in large amounts as well A follow-up one year later revealed a normal infant

A final comment concerning the changed picture in pneumococcic meningitis since the introduction of the sulfonamides relates to the pathogenesis of the disease One of us has been interested in the pneumonias of childhood for many years and has observed that the development of pneumococcic meningitis as a late and terminal complication of pneumococcic pneumonia was not uncommon Such a sequence of events has not been observed on this service throughout the period of study here reported Only two of the 15 patients in this series of cases had pneumonia, both instances of which were mild and apparently not the foci for the meningitis

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[13] Hoyne A L. Meningococcic Meningitis Importance of Intravenous Therapy Illinois M J **68** 307 (Oct.) 1935, Treatment of Meningococcic Meningitis without Intraspinal Therapy Nebraska M J **21** 321 (Sept) 1936

[14] Hoyne A L. and Brown R. H Intrathecal Therapy Not Required for H. Influenzae Meningitis J A M A **136**:597 (Feb 28) 1948 Hoyne A L. Complications of Acute Pyogenic Meningitides Am J Dis Child **75**:741 (May) 1948 Advances in the Treatment of Meningitis J Pediat **19** 778 1941

[15] Rosenberg D H. and Sylvester J C Excretion of Penicillin in Spinal Fluid in Meningitis Science **100** 132 1944

[16] Warring and Smith [1] Ross and Burke [2] Hutchins and Davies [3]

[17] Dowling H F Sweet L K Robinson J A Zellers W W and Hirsh H L. The Treatment of Pneumococcic Meningitis with Massive Doses of Systemic Penicillin Am J M Sc **217**:149 1949

[18] Table 2 in reprints Some reports could not be used for this comparison because they contained no division by age group with reference to therapy

[19] Hogg P and Bradley C D Pneumococcic Meningitis in the Newborn J Pediat **28** 406 1945

[20] Ravenel S F Spontaneous Recovery from Pneumococcus Meningitis Report of a Case in a Newborn Infant South M J **29** 86 1936

[21] Uhr J S Pneumococcus Meningitis Arch Pediat **46** 121 1929

[22] Cohlan S Q and Solomon N H Pneumococcic Meningitis Am J Dis Child **74**:461 (Oct) 1947

[23] Verger P Martin C., and Martin Méningite à pneumocoques chez un nouveau-né de 2 jours Guérison sans séquelles par la pénicilline J de méd de Bordeaux **124** 428 1947

[24] Boursier R. and Ducassou, J L Méningite à pneumocoques chez un nouveau-né Guérison par la Penicilline-therapie, J de méd de Bordeaux **124** 583 1947

SUMMARY

1 Fifteen patients from 4 weeks to 11 yr of age who had pneumococcic meningitis are reported Fourteen recovered, and one infant who was moribund on admission died 32 hr later

2 In a 10-mo -old infant admitted after five days of illness severe hydrocephalus developed and he died nine months later A follow-up study on 11 patients made from six months to five years after the infection showed no residua attributable to the meningitis

3 One patient recovered without the use of intrathecal medication, and a second had only negligible amounts intrathecally, three others had only one intrathecal injection

4 Recovery of an infant 4 weeks of age is reported, the seventh newborn infant reported in the literature as recovering after pneumococcic meningitis

5 All patients received penicillin intramuscularly, in fairly large amounts, and sulfonamides orally Two patients were given penicillin intravenously, also

6 The disadvantages of intrathecal therapy are discussed

CONCLUSIONS

Pneumococcic meningitis is no longer a highly fatal disease A composite study of all cases in infants and children using sulfonamides and penicillin systemically with or without intrathecal therapy gives a recovery rate of 81 0% Early diagnosis and age of the patient are important prognostic factors

In view of the clinical experiences herein described, as well as experimental evidence, it would appear that intrathecal therapy of pneumococcic meningitis is not always a necessity The dangers of this therapy should be fully appreciated It may be indicated in the treatment of the desperately ill patients and those seen late in the disease Repeated intrathecal injections should be used in selected cases only As a result of our studies, we would suggest that every effort should be made to curtail, if not to abandon, intrathecal medication in the treatment of pneumococcic meningitis

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REACTION TO TETRACAINE (PONTOCAINE®) USED AS TOPICAL ANESTHETIC IN BRONCHOSCOPY

STUDY OF 1,000 CASES

Wilson Weisel, M D
and
R Anthony Tella, M D, Wood, Wis

The distinct increase in definitive surgical operations for intrathoracic diseases and lesions during the past two decades has caused an even greater increase in the incidence of diagnostic procedures to confirm or to help rule out the presence of pathologic processes within the chest As the mortality and morbidity following thoracic surgical procedures have decreased and inversely the cures and good results have increased, it has been extremely important and of universal interest that untoward reactions, morbidity, or mortality attendant on diagnostic procedures be reduced to an absolute minimum

One of the most distressing and sometimes fatal [1] complications of endoscopic procedures has been the so-called "anesthetic reaction " In discussions with our colleagues, it has been evident that there has been a decided difference in opinion regarding the incidence and severity of the anesthetic reactions, as well as the anesthetic agent of choice[1] The opinions voiced have varied from the thought that endoscopic work should be a casual office procedure to the view that topical anesthetics should be used only in a hospital where facilities for artificial respiration and intravenous medication are immediately available A review of the literature has revealed a similar diversity of opinion regarding the occurrence of anesthetic reactions and the role of the particular anesthetic agent in the production of these reactions The reactions in general have been inadequately described

This diversity of opinion and an unfortunate previous experience prompted the report of this study Tetracaine (pontocaine®) hydrochloride was chosen as the anesthetic agent first to be studied because it had been proved to be efficient and widely used, although it is one of the

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Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions published by the authors are a result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration

[1] (*a*) Hansen F M., Jr and Stealy C L Sudden Death Following the Use of Pontocaine as a Gargle Anesthetic for Gastroscopic Examination, Rev Gastroenterol **10**: 212 213 (July Aug) 1943 (*b*) Pfeiffer R L. Hypersensitivity to Pontocaine Report of Case Arch Ophth **18** 62-64 (July) 1937 (*c*) Phillips F J, Congleton V L. and Tuttle W Pontocaine Hydrochloride Reaction Relieved by Dial, Anesth. & Analg **20** 233 234 (July Aug) 1941 (*d*) Richards R A Note on Causation of Sudden Death Brit. M J **2** 51 53 (July 12) 1947 (*e*) Schindler R Results of Questionnaire on Fatalities in Gastroscopy Am. J Digest. Dis. **7** 293 295 (July) 1940 (*f*) Thomas J W and Fenton M M Fatalities and Constitutional Reactions Following the Use of Pontocaine J Allergy **14**: 145 159 (Jan) 1943

more controversial [2] of the topical anesthetics In order to assess the effect of tetracaine hydrochloride, 1,000 consecutive diagnostic bronchoscopies on adults were studied These procedures were performed on 947 patients from January, 1947 to December, 1949 The material used for the anesthesia was commercially prepared 2% topical tetracaine solution

A number of methods have been utilized to produce anesthesia for endoscopic procedures, and recently a series of articles have described a variety of methods that are in use today [3] Most of these techniques, however, have employed some form of spray or atomization, and because of rather frequent reactions and one death which we noted in a previous series of cases following spray application to the pharynx, this form of anesthetization was not used for this group of patients In addition, it has been our opinion that the amount of absorption of the anesthetic agent was most difficult to judge following the use of spray, atomization, or nebulization

ANESTHETIC PROCEDURE

The anesthetic procedure utilized was as follows Preoperatively the patient receives 50 mg of meperidine (demerol®) hydrochloride one-half hour prior to the administration of the anesthetic, and 2 grains (120 mg) of phenobarbital (luminal®) sodium are given by hypodermic injection three and one hours respectively, prior to endoscopy Ten cubic centimeters of 2% tetracaine solution is then poured into a sterile medicine glass One cubic centimeter of this is aspirated into a 2 cc Luer-Lok syringe through an attached laryngeal cannula Cotton pledgets held in grasping forceps are then dipped into the remaining solution and pressed dry against the side of the medicine glass The pledgets are placed successively between the faucial pillars, in each pyriform sinus, and held in each of the four locations for about one minute Then 1 cc of solution is placed in the trachea in two doses under visual guidance with use of a laryngeal mirror This method has been efficient in production of satisfactory anesthesia in all these cases The definite amount of anesthetic used has been difficult to determine, but by gravimetric measurements it was noted that an average of 1½ to 2 cc of solution was utilized for the anesthesia These measurements have been admittedly inaccurate because of probable absorption of saliva on the pledgets, as well as the expectoration of some of the anesthetic injected into the trachea, but in general it can be said that 30 to 40 mg of tetracaine hydrochloride has been used in production of anesthesia for most of these cases.

METHOD AND RESULTS OF STUDY

All the patients enumerated have been studied by careful preoperative evaluation, including a history, an assessment of the general conditions, diagnosis or probable diagnosis, complete physical examination, including blood pressure determination, pulse, and respiratory rate, and a superficial neurological check of the eyes and extremities by a resident member of the surgical or anesthesia service One hundred consecutive patients were studied by serial blood pressure, pulse, and respiratory rate determinations at five minute intervals, before, during, and after anesthesia The remainder of the group were studied preoperatively as described, and with the appearance of any untoward reaction, the patient was immediately restudied by a specially trained team while the patient was being observed or treated This was continued in the postreaction period

There were 19 anesthetic reactions noted in this series of patients Twelve of these were classified as minor, and seven as severe The reactions were considered severe when convulsions or severe respiratory signs appeared, and minor when the reaction did not progress to the signs mentioned above

The pattern of the minor reaction was essentially the same for all the patients in whom it occurred After the application of the fourth pledget (in two) or after the first tracheal instillation (in five) and the second tracheal instillation (in five), the patient complained of weakness or began to show a syncopal type of reaction The pupils were noted to dilate, the skin color became pale or gray, and the patient usually fainted At this time the blood pressure fell precipitously in all these patients, the average reading being 70 systolic, 50 diastolic The pulse became thready, and the pulse rate was usually noted to increase, although this was variable In nine patients the pulse rate was counted at 96 to 140 beats per minute, and in three the pulse rate fell below 80 beats per minute In one patient the pulse rate dropped to 40 beats a minute, and the heart rate on auscultation was found to be the same

When this type of reaction occurred, the patient was immediately placed supine on the floor or on an operating table, and equipment was placed in readiness for intravenous medication and artificial respiration with oxygen If twitchings of the face or hands were noted, or if the reaction was not alleviated within three minutes, the patient was given 5 cc of 2½% thiopental (pentothal®)) sodium solution, and oxygen was given by anesthetic machine and mask Three of these patients were given intravenously thiopental sodium because of the appearance of clonic movements of the fingers Bronchoscopy was performed on all the patients soon after subsidence of the syncopal reaction and the establishment of a near normal blood pressure, or while they were anesthetized with the thiopental sodium solution There were no untoward sequelae noted in any of these patients, and the blood pressure and pulse rate determinations postoperatively were essentially the same as the preoperative values

All the patients in whom these minor reactions occurred were men Their ages varied from 21 to 65 The diagnoses, presumptive or proved, of the underlying chest condition were tuberculosis in seven, bronchogenic carcinoma in two, bronchiectasis in two, and chronic asthma in one In none of the patients was a deleterious effect of the anesthetic reaction noted on the primary disease Repeat bronchoscopy with tetracaine hydrochloride anesthesia was done on three of these patients with tuberculosis, and no untoward results were noted, one of this latter group had received thiopental sodium because of finger twitchings at the time of his initial bronchoscopy

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[2] (*a*) Harken D E and Salzberg A M Transtracheal Anesthesia for Bronchoscopy New England J Med **239**: 383 385 (Sept. 9) 1948 (*b*) Lundy J S Clinical Anesthesia A Manual of Clinical Anesthesiology Philadelphia W B Saunders Company 1942 (*c*) Seevers M H in discussion on Symposium Anesthesia in Otolaryngologic Surgery Tr Am Acad Ophth **53** 320-321 (March April) 1949

[3] Benedict, E B Medical Progress Endoscopy New England J Med **226**: 449-455 (March 12 1942) ibid **228** 253 258 (Feb 25) 1943 Corabelli A A Laryngo-Tracheo-Bronchial Anesthesia for Bronchoscopy and Bronchography with Pontocaine Dis of Chest **15** 532 547 (May) 1949 Harken and Salzberg [2a] Imperatori C J and Burman H J Diseases of the Nose and Throat ed. 3 Philadelphia J P Lippincott Company 1947 Jackson C and Jackson C L Diseases of the Nose Throat and Ear Including Bronchoscopy and Esophagoscopy Philadelphia W B Saunders Company 1946 Lierle D M Symposium Anesthesia in Otolaryngologic Surgery Topical and Infiltration Anesthesia Tr Am. Acad. Ophth **53** 288-293 (March April) 1949 Muller J B Mann F., and Abramson H A A Method for Topical Anesthesia by Nebulization of Local Anesthetics Dis of Chest **16** 408-419 (Oct.) 1949 Titche L. L. Anesthesia in Tracheo-Bronchial Procedures Dis of Chest **13**: 452-455 (Sept -Oct) 1947

Of the seven severe reactions, six were of the convulsive type, and one was a pronounced bronchospasm with status asthmaticus The consulsive reactions were all essentially the same and varied only in their rapidity of development and intensity of the convulsions An appreciation of these reactions can best be gained by a consideration of the individual patients in whom they were noted, and of whom a brief description follows

REPORT OF CASES

Case 1 —The patient was a white man, 56, on whom bronchoscopy was performed on Aug 12, 1947, because of an undiagnosed lesion in the right upper lung field The patient was anesthetized in the manner described above, and he was transferred from an anesthesia chair to the bronchoscopy table At the time he was placed on the table, he stated that he felt weak and somewhat lightheaded Examination of the patient's pupils at this time revealed that they were moderately dilated and they appeared fixed The patient was placed supine on the operating table, and his blood pressure was taken and revealed a tension of 150 systolic over 90 diastolic This was an increase over his preoperative level, which had been 130/80 The pulse rate had increased from a preoperative level of 92 to 110 As the patient was being studied, it was noted that twitchings were occurring in the fingers of both hands These rapidly progressed to clonic movements of both arms, and the feet were beginning to be involved in these clonic movements A needle was placed in the left antecubital vein and 5 cc of a 2½% solution of thiopental sodium was immediately administered The patient was given oxygen by means of an anesthetic machine and mask At no time was there any distinct change in the character of the patient's respiration or in the depth of respiration There was a complete cessation of the clonic movements of the arms and feet in about 30 sec, and it was noted after three minutes that the blood pressure had decreased to 140/80 The pulse rate however remained at the level of 110 beats per minute The patient was given an additional 5 cc of 2½% thiopental sodium slowly, and the originally scheduled bronchoscopy was carried out.

The patient was observed postoperatively, and there were no untoward results noted in this patient's pulmonary disease or in his general condition The blood pressure gradually fell to the preoperative level, as did the pulse and the respiratory rate

Case 2 —A male veteran, 30, had a bronchoscopy performed because of far advanced, fibrocavitary tuberculosis of the left lung and suspected endobronchial tuberculosis On Jan 10, 1948, after the application of the fourth moistened pledget as described above, the patient was noted to have dilated pupils, and he did not respond to questions, he gradually slumped forward in the chair in which he was sitting for anesthetization He was gently placed on the floor, and at this time the pulse rate was 102 beats per minute and the blood pressure was 90/60 compared to a preoperative pulse rate of 84 and a blood pressure level of 120/80. Twitching movements of the fingers were noted, which rapidly increased to clonic convulsive movements involving the arms, legs, and face, and his body became rigid During this period the blood pressure rose to 140/90 At the onset of the finger twitchings, a needle was placed in the left antecubital vein, and an anesthesia mask was applied tightly to the face Oxygen was administered, and with the onset of clonic convulsions, 10 cc of 2½% solution of thiopental sodium was given intravenously The convulsive state gradually disappeared, and at no time was there obvious interference with the respiratory effort or any changes in the cardiac beat except an increase in the rate The patient was given an additional 5 cc of the thiopental sodium solution He was then transferred to the operating table, and bronchoscopy was performed with the patient asleep There were no untoward results postoperatively, and two subsequent bronchoscopies were performed, 4 and 10% cocaine anesthesia being used, without ill effects

Case 3 —Bronchoscopy was done on a white female nurse, 41, because of chronic, moderately advanced, fibrocavitary tuberculosis of the right upper lobe on May 3, 1948 After application of four moistened pledgets to the pharynx and pyriform sinuses and instillation of ½ cc of solution in the trachea as described above, the following signs were noted within the course of about two minutes the pupils became widely dilated, the patient did not respond to a question, twitching movements of the fingers rapidly progressed to convulsive movements of the facial muscles the entire body was quickly thrown into a tonic and clonic convulsive state, and she assumed the position of opisthotonos The respirations ceased, the patient became extremely cyanotic, and no pulse, blood pressure or heart beat could be obtained At the onset of this reaction, 5 cc of 2½% thiopental sodium was injected into the antecubital vein, and simultaneously artificial respiration was begun by means of an anesthesia machine, a tight fitting face mask and a rebreathing bag being used The convulsive state gradually subsided, and the patient's color returned to normal A heart beat became audible in about three minutes, and the peripheral pulse became palpable at this time A blood pressure of 80/40 was obtained The pulse gradually returned to normal in about five minutes, and the blood pressure rose to 100/80 Spontaneous respirations were resumed in about 15 minutes, and the patient, although asleep, appeared to be normal Bronchoscopy was thereupon performed with no untoward results, and the patient was returned to her room in good condition The patient was closely observed for three hours, and there were no abnormal variations of the pulse, respirations, or blood pressure A later review of the patient revealed no untoward effect on the lung disease or on the cerebral function, although she complained of a severe headache for about 12 hours after she had responded

Case 4.—A white man, 25, had bronchoscopy performed on Sept 14, 1948, because of moderately advanced, unilateral, fibrocavitary tuberculosis. Following the application of the fourth pledget and as the larynx was being visualized for intratracheal instillation of the anesthetic agent, twitching movements of the lips and face were noted These rapidly increased to clonic and tonic convulsions of the extremities and torso, and the patient became cyanotic These events occurred too rapidly to allow studies of the pulse and blood pressure The patient was placed on the operating table and 10 cc of 2½% thiopental sodium solution was injected rapidly into the left antecubital vein Oxygen was given by means of a tight fitting face mask and anesthesia machine The convulsion ceased in about two minutes, the respirations were normal, and the tidal exchange volume had returned to normal by this time The patient's pulse, although rapid (106 beats per minute), was regular The blood pressure was 110/80, which was very similar to a preoperative determination Bronchoscopy was done on the patient while he was anesthetized, and an active endobronchial tuberculosis was noted No untoward effect of the convulsive reaction was noted Two subsequent bronchoscopies were performed on the patient at this hospital without incidence Cocaine was used as the anesthetic agent on one occasion, and tetracaine hydrochloride was utilized as the anesthetic agent in the other

Case 5 —A white man, 52, was to have bronchoscopy performed on Oct 19, 1948, because of a chronic cough and an undiagnosed hilar lesion of the left lung After anesthetization of the pharynx and the instillation of ½ cc in the trachea, an audible wheeze was noted, which was thought to be due to upper respiratory tract spasm After instillation of a second ½ cc of anesthetic solution, however, the patient entered a severe status asthmaticus The patient's respirations became extremely labored, and this was especially noted in the expiratory phase A deep cyanosis rapidly developed The patient s pulse rate rose from a preoperative rate of 98 beats per minute to 126 The blood pressure rose from 120 systolic and 80 diastolic to

180/110 He became very apprehensive, and although preoperatively he had been given sedatives, he showed a hypomanic response

Epinephrine was given subcutaneously repeatedly without apparent effect, and intravenous administration of aminophylline produced no improvement He was given oxygen by a face mask and later helium and oxygen with a slight decrease of the cyanosis During the ensuing 36 hours the patient's condition remained about the same except for a gradual development of bilateral scattered atelectatic areas and rales at the bases For this reason, bronchoscopy was performed with the patient under general ether anesthesia No localized endobronchial lesion was observed, although the patient presented a chronic, asthmatic type of bronchitis After this procedure the patient improved rapidly, and the lung fields were clear to physical and radiologic examination within three days

Case 6—A white man, 52, was anesthetized for bronchoscopy on Dec 14, 1948, as part of an examination of a cystic lesion of the left lower lung. After the second instillation of ½ cc of 2% tetracaine hydrochloride solution into the trachea, the patient complained of feeling very weak and lightheaded, and it was noted that his pupils were becoming dilated He was immediately placed supine on an operating table, and his pulse rate was noted to have increased from 72 to 130 beats per minute, while his blood pressure had dropped from 120/80 to 90/40 After about one minute, twitching movements of the fingers were noted, and the patient was given oxygen by an anesthetic mask, a needle being placed in the left antecubital vein Because of technical difficulties, no thiopental sodium was given for about four minutes, and during this time clonic convulsive movements of the face and extremities developed During this convulsive period the blood pressure determination rose to 150/90, and the pulse rate was counted as 120 beats per minute The convulsive movements stopped before the anesthesia could be given intravenously, but the patient appeared to be in a tense tonic state so that 8 cc of a 2½% thiopental sodium solution was injected, with complete relaxation of the patient Bronchoscopy was then performed with the patient under the anesthesia, and his recovery was uneventful The blood pressure and pulse returned to preoperative values after the patient reacted, and there was no untoward effect on his general condition or on the pulmonary situation

Case 7—A white man, 58, was anesthetized for bronchoscopy on Feb 7, 1949 The patient was known to have pulmonary tuberculosis, and an endobronchial lesion had been suspected from clinical studies The patient had been anesthetized in the usual manner, and a bronchoscope had been passed after the patient was placed in appropriate position As the bronchi were being inspected, an assistant noted the appearance of twitching movements of the hands and forearms The instrument was withdrawn, and arrangements were made for the intravenous administration of thiopental sodium and for a high concentration of oxygen by means of an anesthetic mask During these preparations, the twitching movements became convulsive in character, and they involved the face and extremities There was an apparent respiratory arrest during this period, but no appreciable change in the pulse rate or volume or in the heart rate was noted After the injection of 5 cc of 2½% thiopental sodium solution into the left antecubital vein, the convulsive movements ceased, and the patient resumed normal respiratory movements in about 30 sec He was given an additional 3 cc of solution intravenously, although no further convulsive movements were noted The patient responded in about 20 minutes, and no untoward general or pulmonary complications were noted following this convulsive reaction

COMMENT

The toxicity of the commonly used agents for surface anesthesia has long been recognized, and comparisons of the relative dangers of the drugs have been made by a number of workers[4] Reports of the clinical incidence of these reactions and of the physiologic effect on patients have, however, been few in number The fact that the danger of an anesthetic reaction may be very real was made clear to us by the death of one patient, which we had attributed directly to an anesthetic reaction, and which occurred prior to the study of this series of patients

The fact that these reactions can be prevented and controlled by barbiturates[5] has been a most important factor in our continued use of the local anesthetic drugs We feel that were it not for the use of considerable preoperative medication, the reaction rates from this agent might be higher, and we are certain that the intravenous use of thiopental sodium has prevented a fatal outcome in some of the cases herein reported

The use of the barbiturates alone does not constitute a sufficient safety mechanism, however, and we believe that facilities for oxygen administration and particularly for artificial respiration must be immediately available It is possible that cardiac resuscitation might also be indicated, and for that reason, a surgical setup would be essential In regard to cardiac arrest, it has been our experience that some apparent instances of this complication have not been real, and, therefore, we would advise conservatism in the performance of thoracotomy for patients having these anesthetic reactions

Tetracaine hydrochloride as an anesthetic has been excellent, and we have been impressed by its quick action and the consequent short period of time required for the anesthetization procedure We believe that from a practical standpoint, however, the potential dangers of this drug must be recognized, but we do not mean to condemn the agent for this reason any more than the other local anesthetic drugs can be criticized, because toxic reactions from their use have been seen and reported By the use of small doses, as pointed out by the company marketing tetracaine hydrochloride, and by the proper preoperative medication, the incidence of reactions should be small In addition, the prompt recognition and treatment of reactions should prevent serious complications

The incidence of reactions reported in this series has been much higher than that previously noted, and we have attempted to explain this by a careful survey of the patients in whom the reactions were noted Unfortunately, there have been no significant factors found that might account for these figures The age and physical condition of the patient have not been unusual when compared to the group as a whole, the disease process and the presence of such signs as hemoptysis, wheezing, and allergic manifestations have not been different from the larger group of patients in whom no reactions occurred

In the group of 100 consecutive patients who were studied routinely by serial determinations of the blood pressure, pulse, and respiratory rate, there was a uniform response The blood pressure showed a slight to moderate elevation of both systolic and diastolic levels, and this varied directly with the degree of coughing occasioned by the intratracheal instillation of the solution In addition, there was a moderate elevation of the pulse and respiratory rate It was our impression that these changes were independent of the anesthetic and were more dependent on the patient's apprehension and his response to the procedures These changes usually lasted during bronchoscopy and for an average of one-half hour after the procedure It is interesting that this vascular response was the opposite of that noted in the patients with minor reactions, and also in those with the severe reactions who were studied prior to the onset of convulsions or bronchospasm The fact that the systemic effects of the anesthetic were generally negligible makes the explanation of the toxic reactions very difficult, except on the basis of some idiosyncrasy existing at that time The fact that patients who had had reactions could be reanesthetized without event has further confused our attempts at explaining the mechanism involved

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[4] Gomori G Accidents of Local Anesthesia Surg Gynec & Obst 62 951-959 (June) 1936 Seevers

[5] Fraser R. J and Stringer R. M Pentothal Sodium in Relation to the Toxic and Convulsive States Canad. M A J 62 249-252 (March) 1940 Phillips, Congleton and Tuttle Tuohy E. B Practical Concepts in Anesthesia Ohio State M J 43 148-153 (Feb) 1947

SUMMARY

A study is reported of 1,000 consecutive bronchoscopies in 947 patients, with use of 2% topical tetracaine (pontocaine®) hydrochloride anesthesia, in whom there were 12 minor and seven severe toxic reactions attributed to the anesthetic agent An attempt has been made to evaluate a few physiologic changes in patients anesthetized with tetracaine hydrochloride We feel that tetracaine hydrochloride is an excellent agent for topical anesthesia, but that its danger must be appreciated It should be used with caution in a hospital where adequate preoperative medication can be given and where all resuscitative measures are immediately available

Veterans Administration Center

ARTIFICIAL TRANSMISSION OF VIRAL HEPATITIS AMONG INTRAVENOUS DIACETYLMORPHINE ADDICTS

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During the past few years much attention has been focused on the epidemiology of virus hepatitis, especially the accidental transmission of the disease through parenteral infusions and inoculations The infectiousness of even minute quantities of human blood or serum has been amply demonstrated

The accidental dissemination of various infections among intravenous drug addicts is now a recognized fact Of special interest are reports [1] on the artificial transmission of malaria, tetanus, and bacterial and mycotic endocarditis To the best of our knowledge, there have been no references in the literature to the spread of hepatitis or other viral infections among these patients Recently we had an opportunity of studying three cases of hepatitis among intravenous drug addicts It is the purpose of this paper to record these cases and to draw attention to this mode of spread of hepatitis and to this additional hazard of narcotic addiction

REPORT OF CASES

CASE 1 —C G , a Negro man, 23, admitted to Beth David Hospital, May 21, 1951, complained of fatigue, abdominal discomfort, anorexia and vomiting of three weeks duration, and yellow discoloration of the eyes, pale stools, and dark urine for the past week He had been taking diacetylmorphine (heroin) intravenously for 18 mo and had been sharing his hypodermic outfit with other addicts up to the time of his admission to the hospital The patient had not received any other injection or inoculation for the past four years Early in March, 1951 jaundice developed in a fellow addict, L B , with whom the patient had shared injections up to Feb 20, 1951, and he was admitted to another hospital The patient's past history was irrelevant

The patient was well nourished and did not appear particularly ill However, the scleras and buccal mucous membrane were intensely jaundiced The temperature was 100 F, the pulse rate 100, and the respiratory rate 22 The pupils were equal and reacted to light and in accommodation The lungs were clear The heart was normal The blood pressure was 150 mm of mercury systolic and 90 diastolic There was no abdominal distention, but there was some tenderness on deep pressure over the right hypochondrium The liver and spleen were not palpable Both antecubital fossae and the forearms showed scarring and pigmentation along the course of the veins Except for diminished patellar reflexes, the reflexes were normal

The red blood cell count showed 4,240,000 cells with 90% hemoglobin The white blood cell count was 5,050 with 50% polymorphonuclears, 41% lymphocytes and 9% monocytes Urinalysis showed a specific gravity of 1 017, an occasional white blood cell, a trace of bile and urobilinogen, but no sugar or albumin The erythrocyte sedimentation rate was 11 mm in 15 min Both the Wassermann and Mazzini tests were negative The icteric index was 66, the cephalin flocculation 3+, and the alkaline phosphatase 5 51 units The serum albumin was 4 5 and the globulin 3 8 gm per 100 cc The value for blood urea was 13 mg and for sugar 133 mg per 100 cc A roentgenogram of the chest showed the heart and lungs to be normal

Treatment consisted of bed rest, a high-carbohydrate and high protein diet, and daily administration of liver extract parenterally Diacetylmorphine was not given The clinical course was uneventful, with gradual return of the patient s appetite and subsidence of the abdominal discomfort The jaundice receded slowly A sulfobromophthalein (bromsulphalein®) sodium test done on June 7 showed 40% retention of dye after 45 min The same test repeated two weeks later showed only 2% retention At about the same time the cephalin flocculation test became negative When the patient was discharged from the hospital on July 2, 1951, he showed no jaundice and was in excellent condition The icteric index taken the same day was 17

From the Medical Services of Beth David and Sydenham Hospitals

[1] Appelbaum E and Gelfand B B The Artificial Transmission of Malaria among Intravenous Diacetylmorphine Addicts Preliminary Note on the Use of Atabrine in Malaria J A M A **102**: 1664-1670 (May 19) 1934 Helpern M Epidemic of Fatal Æstivo-Autumnal Malaria among Drug Addicts in New York City Transmitted by Common Use of Hypodermic Syringe Am J Surg **26** 111 123 (Oct.) 1934 Doane J C Tetanus as a Complication in Drug Inebriety J A M A **82** 1105 1106 (April 5) 1924 Schoenbach E B and Spingarn C L. Inoculation Malaria and Drug Addiction J Mt Sinai Hosp **8** 998 1004 1942 Hussey H H Kelliher T F Schaefer B F and Walsh B J Septicemia and Bacterial Endocarditis Resulting from Heroin Addiction Report of 5 Cases, J A M A **126** 535 538 (Oct. 28) 1944 Wilhelm F Hirsh H L Hussey H H and Dowling H F The Treatment of Acute Bacterial Endocarditis with Penicillin Ann Int Med. **26** 221 230 1947 Joachim H and Polayes S H Subacute Endocarditis and Systemic Mycosis (Monilia) J A. M A **115**: 205 208 (July 20) 1940 Wikler A Williams E. G Douglass, E D Emmons C W and Dunn R. C. Mycotic Endocarditis Report of a Case ibid **119** 333 336 (May 23) 1942

In this case the diagnosis of hepatitis was definitely established by the clinical picture and laboratory data It is important to note that this patient shared the hypodermic outfit with addict L B , who was treated for hepatitis in another hospital The last time that these two addicts shared injections was about 70 days prior to the onset of the present illness in patient C G The accidental transfer of hepatitis from addict L B to our patient is a reasonable assumption, although the possibility that both patients acquired the disease from a common source cannot be excluded If L B was the source of our patient's infection, then the minimum incubation period was 70 days This would favor a diagnosis of homologous serum hepatitis

CASE 2 —C B , a Negro girl, 16, was admitted to Sydenham Hospital, June 7, 1951, with the complaint of yellowish discoloration of the eyes, a symptom to which her attention was directed by friends on the same day She had noticed that her urine was getting darker than usual for the past three weeks There was no history of nausea, vomiting, or abdominal distress She had been taking diacetylmorphine intravenously for the past two months, sharing a hypodermic outfit with other addicts, one of whom was being treated for hepatitis in another hospital There was no history of blood transfusion or any other parenteral inoculation

The patient was well developed and did not appear acutely ill The temperature was 99 6 F , the pulse rate 88, and the respiratory rate 20 The blood pressure was 115 mm of mercury systolic and 65 diastolic There was poor oral hygiene and coating of the tongue The scleras were icteric The lungs were clear The heart was not enlarged, and the rhythm was regular There was moderate enlargement and tenderness of the liver The spleen was not felt Scarring and pigmentation was seen over the veins of the forearms Some of the veins appeared thickened and sclerosed The reflexes were all normal

The red blood cell count showed 4,610,000 cells, with 11 gm of hemoglobin The white blood cell count was 10,200, with 46% polymorphonuclears and 54% lymphocytes Urinalysis showed a few white blood cells and numerous epithelial cells, but findings were otherwise normal The blood urea was 5 4 mg , the sugar 127 mg , the phosphorus 3 6 mg , the cholesterol 282 mg and the ester 146 mg per 100 cc The serum albumin was 3 6 gm and the globulin 2 6 gm per 100 cc The icteric index was 41, and the van den Bergh showed an immediate reaction on the direct test and 3 5 mg per 100 cc on the indirect test The cephalin flocculation was 4+ and the alkaline phosphatase 13 7 Bodansky units The prothrombin time was 31 sec and the urobilinogen was present in the urine in 1 20 dilution A sulfobromophthalein test done on June 13 showed a 40% retention in the serum 45 min after injection of the dye A roentgenogram of the thorax showed the heart and lungs to be normal

The patient was treated with bed rest a high-carbohydrate and high protein diet, and also lipotropic agents, crude liver, and vitamins Remarkable clinical improvement followed, with clearing of the jaundice and diminution in the size and tenderness of the liver At the request of a probation officer, the patient was discharged from the hospital on June 20 and transferred to the House of the Good Shepherd

In this case the clinical picture and course, combined with the laboratory data warranted a diagnosis of hepatitis The relationship of the patient s illness to narcotic addiction appears probable, since she had shared injections with an addict who was suffering from hepatitis If the patient's statement that she had taken intravenous diacetylmorphine for only two months is correct, then the incubation period of her illness was comparatively short but may have been 60 days The precise form of this patient's hepatitis is therefore a matter of speculation

CASE 3 —W H , a Negro man 24, admitted to Beth David Hospital, June 21, 1951, complained of fatigue, lassitude, abdominal discomfort, and yellow discoloration of the eyes of one week s duration He noticed at the same time that the stools were light-colored and the urine dark He had been taking diacetylmorphine intravenously for the past five months and had been sharing his hypodermic outfit with other addicts His last injection was on June 10 He had not received any other injection during the past year and had not been exposed to any intoxicating chemicals He did not recall encountering any jaundice cases among his fellow addicts Although he knew C G (case 1), he never shared injections with him His past history was irrelevant

The patient was well nourished and did not appear either acutely or chronically ill The temperature was 99 F , the pulse rate 74, and the respiratory rate 18 The pupils were equal and reacted to light and in accommodation The lungs were clear The heart was not enlarged, and the rhythm was regular The blood pressure was 103 mm of mercury systolic and 60 diastolic. The abdomen was soft and not distended There was slight tenderness on deep palpation below the right costal margin The superficial veins of the forearms were thrombosed and scarred All reflexes were normal

The red blood cell count showed 4,810,000 cells, with 94% hemoglobin The white blood cell count was 7,100, with 59% polymorphonuclears, 38% lymphocytes, and 3% eosinophils Urinalysis showed a faint trace of albumin, eight to 10 white blood cells, and a trace of bile and urobilinogen Both the Wassermann and Mazzini tests were negative The cephalin flocculation test was 2+ and the alkaline phosphatase 5 1 units The icteric index was 80 The serum albumin was 3 56 gm and the globulin 3 83 gm per 100 cc The blood urea was 10 mg , the cholesterol 200 mg , and the ester 100 mg per 100 cc The stools appeared clay-colored A sulfobromophthalein test revealed 40% dye retention after 45 min A roentgenogram of the chest revealed the lungs and heart to be normal

The patient was treated with bed rest, a high-carbohydrate and high protein diet and vitamins Response to this regimen was prompt, and the clinical course to date has been very favorable While the patient is still jaundiced he is quite comfortable, and a sense of well being has developed The stools are no longer clay-colored The patient is still under observation

The clinical picture and course and the laboratory findings in this case are consistent with a diagnosis of hepatitis There is no history of definite contact with another patient with hepatitits However, the fact that the patient was an intravenous drug addict suggests very strongly that the hepatic infection was transmitted by means of a contaminated hypodermic outfit In this case it is impossible to determine the incubation period or the precise form of viral hepatitis

COMMENT

It is not within the scope of this paper to discuss the various aspects of hepatitis on which an extensive literature has been accumulated during the past few years Suffice it to mention that the virus etiology of both infectious hepatitis and homologous serum jaundice is now an accepted fact In the three cases reported herein, the history, clinical picture and course, and laboratory data leave no doubt as to the diagnosis of viral hepatitis In case 1 the apparently long incubation period makes the diagnosis of homologous serum jaundice very likely The precise form of hepatitis present in cases 2 and 3 is speculative

As mentioned previously, the transmission of hepatitis through parenteral injections has been established In this connection it may be pertinent to describe briefly the method of group injection practiced by the narcotic addicts The drug used is almost invariably diacetylmorphine and is as a rule administered intravenously The changes were independent of the anesthetic and were more dependent on the patient's apprehension and his response to the procedures These changes usually lasted during bronchoscopy and for an average of one-half hour after the procedure It is interesting that this vascular response was the opposite of that noted in the patients with minor reactions, and also in those with the severe reactions who were studied prior to the onset of convulsions or bronchospasm The fact that the systemic effects of the anesthetic were generally negligible makes the explanation of the toxic reactions very difficult, except on the basis of some idiosyncrasy existing at that time The fact that patients who had had reactions could be re-anesthetized without event has further confused our attempts at explaining the mechanism involved

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The patient was well nourished and did not appear particularly ill However, the scleras and buccal mucous membrane were intensely jaundiced The temperature was 100 F the pulse rate 100, and the respiratory rate 22 The pupils were equal and reacted to light and in accommodation The lungs were clear The heart was normal The blood pressure was 150 mm of mercury systolic and 90 diastolic There was no abdominal distention but there was some tenderness on deep pressure over the right hypochondrium The liver and spleen were not palpable Both antecubital fossae and the forearms showed scarring and pigmentation along the course of the veins Except for diminished patellar reflexes, the reflexes were normal

The red blood cell count showed 4,240,000 cells, with 90% hemoglobin The white blood cell count was 5 050 with 50% polymorphonuclears, 41% lymphocytes and 9% monocytes Urinalysis showed a specific gravity of 1 017, an occasional white blood cell, a trace of bile and urobilinogen, but no sugar or albumin The erythrocyte sedimentation rate was 11 mm in 15 min Both the Wassermann and Mazzini tests were negative The icteric index was 66 the cephalin flocculation 3+, and the alkaline phosphatase 5 51 units The serum albumin was 4 5 and the globulin 3 8 gm per 100 cc The value for blood urea was 13 mg and for sugar 133 mg per 100 cc A roentgenogram of the chest showed the heart and lungs to be normal

Treatment consisted of bed rest, a high-carbohydrate and high protein diet, and daily administration of liver extract parenterally Diacetylmorphine was not given The clinical course was uneventful, with gradual return of the patient's appetite and subsidence of the abdominal discomfort The jaundice receded slowly A sulfobromophthalein (bromsulphalein®) sodium test done on June 7 showed 40% retention of dye after 45 min The same test repeated two weeks later showed only 2% retention At about the same time the cephalin flocculation test became negative When the patient was discharged from the hospital on July 2, 1951, he showed no jaundice and was in excellent condition The icteric index taken the same day was 17

From the Medical Services of Beth David and Sydenham Hospitals

[1] Appelbaum E and Gelfand B B The Artificial Transmission of Malaria among Intravenous Diacetylmorphine Addicts Preliminary Note on the Use of Atabrine in Malaria J A. M A **102** 1664-1670 (May 19) 1934 Helpern, M Epidemic of Fatal Æstivo-Autumnal Malaria among *Drug Addicts in New York City* Transmitted by Common Use of Hypodermic Syringe Am J Surg **26** 111 123 (Oct) 1934 Doane J C Tetanus as a Complication in Drug Inebriety J A M A **82** 1105 1106 (April 5) 1924 Schoenbach E B and Spingarn C L. Inoculation Malaria and Drug Addiction J Mt Sinai Hosp **8** 998 1004 1942 Hussey H H Keliher T F Schaefer B F and Walsh B J Septicemia and Bacterial Endocarditis Resulting from Heroin Addiction Report of 5 Cases J A M A. **126**: 535 538 (Oct 28) 1944 Wilhelm F Hirsh H L. Hussey H H and Dowling, H F The Treatment of Acute Bacterial Endocarditis with Penicillin Ann Int Med **26**: 221 230 1947 Joachim H and Polayes S H Subacute Endocarditis and Systemic Mycosis (Monilia) J A. M A. **115**: 205 208 (July 20) 1940 Wikler A. Williams E G Douglass, E D Emmons C W and Dunn R. C. Mycotic Endocarditis Report of a Case ibid. **119** 333 336 (May 23) 1942

In this case the diagnosis of hepatitis was definitely established by the clinical picture and laboratory data It is important to note that this patient shared the hypodermic outfit with addict L B , who was treated for hepatitis in another hospital The last time that these two addicts shared injections was about 70 days prior to the onset of the present illness in patient C G The accidental transfer of hepatitis from addict L B to our patient is a reasonable assumption, although the possibility that both patients acquired the disease from a common source cannot be excluded If L B was the source of our patient's infection, then the minimum incubation period was 70 days This would favor a diagnosis of homologous serum hepatitis

Case 2 —C B , a Negro girl, 16, was admitted to Sydenham Hospital, June 7, 1951, with the complaint of yellowish discoloration of the eyes, a symptom to which her attention was directed by friends on the same day She had noticed that her urine was getting darker than usual for the past three weeks There was no history of nausea, vomiting, or abdominal distress She had been taking diacetylmorphine intravenously for the past two months, sharing a hypodermic outfit with other addicts, one of whom was being treated for hepatitis in another hospital There was no history of blood transfusion or any other parenteral inoculation

The patient was well developed and did not appear acutely ill The temperature was 99 6 F , the pulse rate 88, and the respiratory rate 20 The blood pressure was 115 mm of mercury systolic and 65 diastolic There was poor oral hygiene and coating of the tongue The scleras were icteric The lungs were clear The heart was not enlarged, and the rhythm was regular There was moderate enlargement and tenderness of the liver The spleen was not felt Scarring and pigmentation was seen over the veins of the forearms Some of the veins appeared thickened and sclerosed The reflexes were all normal

The red blood cell count showed 4,610,000 cells, with 11 gm. of hemoglobin The white blood cell count was 10,200, with 46% polymorphonuclears and 54% lymphocytes Urinalysis showed a few white blood cells and numerous epithelial cells, but findings were otherwise normal The blood urea was 5 4 mg , the sugar 127 mg , the phosphorus 3 6 mg the cholesterol 282 mg and the ester 146 mg per 100 cc The serum albumin was 3 6 gm and the globulin 2 6 gm per 100 cc The icteric index was 41, and the van den Bergh showed an immediate reaction on the direct test and 3 5 mg per 100 cc on the indirect test The cephalin flocculation was 4+ and the alkaline phosphatase 13 7 Bodansky units The prothrombin time was 31 sec , and the urobilinogen was present in the urine in 1 20 dilution A sulfobromophthalein test done on June 13 showed a 40% retention in the serum 45 min after injection of the dye A roentgenogram of the thorax showed the heart and lungs to be normal

The patient was treated with bed rest a high-carbohydrate and high protein diet, and also lipotropic agents, crude liver, and vitamins Remarkable clinical improvement followed, with clearing of the jaundice and diminution in the size and tenderness of the liver At the request of a probation officer, the patient was discharged from the hospital on June 20 and transferred to the House of the Good Shepherd

In this case the clinical picture and course, combined with the laboratory data, warranted a diagnosis of hepatitis The relationship of the patient's illness to narcotic addiction appears probable, since she had shared injections with an addict who was suffering from hepatitis If the patient's statement that she had taken intravenous diacetylmorphine for only two months is correct, then the incubation period of her illness was comparatively short but may have been 60 days The precise form of this patient s hepatitis is therefore a matter of speculation

Case 3 —W H , a Negro man, 24, admitted to Beth David Hospital, June 21, 1951, complained of fatigue lassitude, abdominal discomfort, and yellow discoloration of the eyes of one week s duration He noticed at the same time that the stools were light-colored and the urine dark He had been taking diacetylmorphine intravenously for the past five months and had been sharing his hypodermic outfit with other addicts His last injection was on June 10 He had not received any other injection during the past year and had not been exposed to any intoxicating chemicals He did not recall encountering any jaundice cases among his fellow addicts Although he knew C G (case 1), he never shared injections with him His past history was irrelevant.

The patient was well nourished and did not appear either acutely or chronically ill The temperature was 99 F , the pulse rate 74, and the respiratory rate 18 The pupils were equal and reacted to light and in accommodation The lungs were clear The heart was not enlarged, and the rhythm was regular The blood pressure was 103 mm of mercury systolic and 60 diastolic The abdomen was soft and not distended There was slight tenderness on deep palpation below the right costal margin The superficial veins of the forearms were thrombosed and scarred All reflexes were normal

The red blood cell count showed 4,810,000 cells, with 94% hemoglobin The white blood cell count was 7,100, with 59% polymorphonuclears, 38% lymphocytes, and 3% eosinophils Urinalysis showed a faint trace of albumin, eight to 10 white blood cells, and a trace of bile and urobilinogen Both the Wassermann and Mazzini tests were negative The cephalin flocculation test was 2+ and the alkaline phosphatase 5 1 units The icteric index was 80 The serum albumin was 3 56 gm and the globulin 3 83 gm per 100 cc The blood urea was 10 mg , the cholesterol 200 mg , and the ester 100 mg per 100 cc The stools appeared clay-colored A sulfobromophthalein test revealed 40% dye retention after 45 min A roentgenogram of the chest revealed the lungs and heart to be normal

The patient was treated with bed rest, a high-carbohydrate and high protein diet, and vitamins Response to this regimen was prompt, and the clinical course to date has been very favorable While the patient is still jaundiced, he is quite comfortable, and a sense of well being has developed The stools are no longer clay-colored The patient is still under observation

The clinical picture and course and the laboratory findings in this case are consistent with a diagnosis of hepatitis There is no history of definite contact with another patient with hepatitis However, the fact that the patient was an intravenous drug addict suggests very strongly that the hepatic infection was transmitted by means of a contaminated hypodermic outfit In this case it is impossible to determine the incubation period or the precise form of viral hepatitis

COMMENT

It is not within the scope of this paper to discuss the various aspects of hepatitis on which an extensive literature has been accumulated during the past few years Suffice it to mention that the virus etiology of both infectious hepatitis and homologous serum jaundice is now an accepted fact In the three cases reported herein, the history, clinical picture and course, and laboratory data leave no doubt as to the diagnosis of viral hepatitis In case 1 the apparently long incubation period makes the diagnosis of homologous serum jaundice very likely The precise form of hepatitis present in cases 2 and 3 is speculative

As mentioned previously, the transmission of hepatitis through parenteral injections has been established In this connection it may be pertinent to describe briefly the method of group injection practiced by the narcotic addicts The drug used is almost invariably diacetylmorphine and is as a rule administered intravenously The addicts usually congregate in groups The drug is put into a tablespoon, and tap water is added The contents are then brought to a boiling point by using a candle or match flame A small piece of cotton is put into the tablespoon, and the solution is drawn up through the cotton into a large medicine dropper Strips of paper are wrapped around the tip of the dropper in order to fit the needle After a tourniquet is applied to the arm, the needle is inserted into one of the antecubital veins When the flow of blood into the eye dropper is observed, the tourniquet is released, and the solution is injected into the vein The hypodermic outfit, known as "the works," is never sterilized and is passed around from one addict to another It is obvious that this method lends itself to the transfer of infectious agents from one addict to another

In our patients there can be little doubt that hepatitis was artificially induced in cases 1 and 2 In case 3 the relationship between the hepatitis and the injections is a reasonable assumption It has also come to our attention that other intravenous drug addicts suffering from hepatitis have been admitted to several hospitals in the city during the past few months

There is therefore sufficient evidence that a number of intravenous diacetylmorphine addicts have accidentally acquired viral hepatitis while sharing injections with other addicts who were afflicted with this disease It is not unlikely that more cases of this type will soon be uncovered Attention is thus directed to another hazard of narcotic addiction, namely, the transmission of a virus infection The public health implications of this extraordinary manner of spreading hepatitis cannot therefore be overemphasized This problem assumes particular importance at this time because of the recent exposure of the widespread existence of diacetylmorphine addiction, especially among adolescents

SUMMARY

Three cases of viral hepatitis among intravenous diacetylmorphine (heroin) addicts have been reported It was pointed out that transmission of the disease among these patients was very likely due to the communal use of hypodermic outfits This extraordinary manner of spreading hepatitis focuses attention on another hazard of narcotic addiction and on an important public health problem

ADDENDUM

Since this manuscript was submitted, additional information has become available Hepatitis developed on or about July 10, 1951, in a fellow addict under observation in another hospital, with whom our patient, W H (case 3), had shared injections up to the end of April, 1951 Assuming that our patient was the source of this other addict's infection, the probable incubation period in the new case was approximately 70 days This would favor a diagnosis of homologous serum hepatitis in both patients

It may also be noted that clinical improvement in case 3 was progressive The sulfobromophthalein retention on July 8 was 2%, and the icteric index on July 18 was 13 At the time of discharge on July 21 the patient was in excellent condition

We should also like to record briefly an additional case of hepatitis in a diacetylmorphine addict which has since come under our care On July 28, 1951, P C, a Negro man, 26, was admitted to Beth David Hospital with the complaints of weakness, anorexia, nausea, vomiting, and jaundice of five days' duration He had been taking diacetylmorphine intravenously for the past eight months and occasionally had shared his hypodermic equipment with other addicts On examination the patient appeared acutely ill and asthenic The temperature was 100 F, the pulse rate 84, and the respiratory rate 20 The blood pressure was 140 mm of mercury systolic and 85 diastolic The scleras and mucous membranes were icteric The heart and lungs presented no abnormal findings The liver was moderately enlarged and tender, and the spleen was palpable Both forearms showed scarring and pigmentation along the course of the veins The reflexes were all normal The red blood cell count showed 4,100,000 cells, with 84% hemoglobin The white blood cell count was 3,100, with 49% polymorphonuclears, 38% lymphocytes, 6% monocytes, and 7% eosinophils The urine showed urobilinogen in 1 32 dilution but no bile The icteric index was 53, the cephalin flocculation 2+, and the alkaline phosphatase 3 82 units The blood urea was 13 8 mg, the cholesterol 245 mg, and the esters 125 mg per 100 cc A sulfobromophthalein test showed 45% dye retention after 45 min Treatment consisted of bed rest, high protein and high carbohydrate diet, and the use of vitamins and lipotropic substances Clinical improvement became apparent after several days of therapy This patient is still under observation

Since describing the above patients, one of us (E A) has observed four additional cases of hepatitis among drug addicts, indicating that the disease is spreading in this group

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Psychiatry and Freud—Freud shocked the world of science and of intellect in arguing and in demonstrating both the rationality of the irrational and the irrationality of the rational The first of the two propositions was the less opposed, the second aroused frenzied resentment It is this split with the formal rationalism of his age that distinguishes and separates Freud from his contemporaries in science and psychiatry It was the firm faith of the nineteenth century that "la raison a toujours raison, that memories and shadows were less important than the direct perception of the real world in the clear light of the day " These were the common assumptions of the rationalistic enlightened world It is true that these assumptions were challenged and denied by a few isolated, "eccentric" thinkers—Carlyle, Dostoievski, Baudelaire, Tolstoi, Nietzsche However, none of these was "a man of science," and hence none of them really challenged science Such discomfiture as they caused to science could be neutralized by anatomizing them and exposing, as Max Nordau did, their 'degeneracy " Freud, unlike the other isolated and eccentric thinkers, was a man of science Though many a Nordau tried it, Freud could not be anatomized or his 'degeneracy" exhibited for the pleasure and profit of the intellectual pharisees He stood forth an obdurate challenge to the naïve rationality of the nineteenth century, and he endures as such to this day The antirationalism of Freud proffers some deep and challenging problems—in epistemology, in the dynamics of therapy, in esthetics and morals—problems which few have braved, but with which we must soon come to grips—Iago Galdston, M D., Psychiatry Without Freud, *A M A Archives of Neurology and Psychiatry,* July, 1951

PODOPHYLLUM RESIN IN TREATMENT OF TINEA CAPITIS

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and
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In a preliminary report[1] evidence was submitted that a 0 2% ointment of podophyllum resin (podophyllin), in an aquaphor® (an oxycholesterol-petrolatum ointment base) or a polyethylene glycol (carbowax®) base, had a beneficial affect upon the course in several cases of tinea capitis Further clinical trial of this medication, while producing results not quite up to earlier expectations, indicated that podophyllum resin was sometimes a useful agent in the treatment of this rather recalcitrant disease

PRESENT INVESTIGATIONS

In every case the diagnosis was made both clinically and by the presence of fluorescence under the Wood light It was further confirmed by microscopic examination of the hair and subsequent culture Each patient was given the routine instructions for the treatment of tinea capitis and a supply of 0 2% podophyllum resin in carbowax® 1500 and each was instructed to apply the ointment twice daily, carefully avoiding contact with his eyes Every patient was informed also of the possibility of an inflammatory reaction following continued use of the ointment When this occurred, the patient was instructed to apply either boric acid compresses or boric acid ointment, depending upon the severity of the reaction In three instances the parents neglected the reaction until heavy crusting resulted In these cases treatment with podophyllum resin was discontinued, and 2% salicylic acid in cottonseed oil was applied under a cap After subsidence of the inflammation the podophyllum resin ointment was reapplied In these children the salve was applied only once a day Our results are tabulated in table 1

TABLE 1 —*Results of Treatment with Podophyllum Resin Ointment*

Organism	Cured			Improved			No Change			Spread While Under Treatment Podophyllum Only	Lost	Total
	Podophyllum and X Ray	Podophyllum Only	Total	Podophyllum and X Ray	Podophyllum Only	Total	Podophyllum and X Ray	Podophyllum Only	Total			
M audouini	24	22	46	3	15	18	3	18	21	0	15	100
M lanosum	0	7	7	0	1	1	0	0	0	0	0	8
T sulfureum	1	0	1	0	0	0	0	0	0	0	0	1
Endothrix (unidentified)	0	1	1	0	0	0	0	0	0	0	0	1
T crateriforme	1	0	1	0	0	0	0	0	0	0	0	1
T violaceum	0	0	0	0	0	0	0	0	0	0	1	1
Total	26	30	56	3	16	19	3	18	21	9	16	121

In all patients with tinea capitis cures were judged by the disappearance of subjective manifestations and the cutaneous lesions, the absence of fungi in slide preparations and cultures, and the absence of fluorescence under Wood light If all these were absent on four consecutive weekly examinations, a patient was pronounced cured

TIME REQUIRED FOR CURES AFTER LOCAL APPLICATION WITH PODOPHYLLUM RESIN OINTMENT

Of the 105 children followed up, cure was achieved in 30 with the local application of a 0 2% podophyllum resin in carbowax® 1500 This varied from two weeks to seven months Table 2 illustrates the time required in various types of infections

TIME REQUIRED FOR CURES WITH X-RAY EPILATION AND SUBSEQUENT APPLICATION OF PODOPHYLLUM RESIN OINTMENT

This group comprises children with widespread involvement of the scalp to whom local therapy with podophyllum resin was given for two months Since in our previous experience in over 20% of our cases there was failure to clear up after x-ray epilation and subsequent antimycotic treatment, it was our conviction that x-ray epilation should be resorted to only after at least eight weeks of local treatment and lack of response to therapy Table 3 illustrates the time required for cure with treatment combining x-ray epilation and subsequent application of podophyllum resin ointment

CURE ACHIEVED IN TRICHOPHYTON (T) SULFUREUM INFECTION

In addition to the above cases, in one case of widespread T sulfureum infection cure was achieved in five and one-half months

CURE ACHIEVED IN INFECTION DUE TO TRICHOPHYTON (T) CRATERIFORME

In one case of a widespread infection due to T crateriforme, a rather resistant type of infection, the lesions cleared in four months

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[1] Reiss, F and Doherty D D Fungous Infections of the Skin and Scalp A New Approach to Their Treatment New York State J Med 40 1939 1949

COMMENT

From the results obtained it is obvious that podophyllum resin is as efficacious as many other drugs applied in the past In addition to its antifungal activity, a mild inflammatory reaction is observed in some instances which, according to our estimation, is not only harmless but rather beneficial A noteworthy feature of the podophyllum resin treatment is that the infected hair becomes loose and can easily be epilated manually In widespread infections due to M audouini this is particularly desirable, and it becomes very important that the medication have a high antifungal index Comparing our results in tinea capitis caused by M audouini with those obtained by Schwartz and associates [2] and Combes and associates,[3] we feel justified in our conclusions (table 4) Of 73 patients, 30 were cured (42 0%), 16 were improved (21 9%), 18 showed no change (24 7%), 9 showed a spread of the infection while under treatment (12 3%), and 16 did not report back to the clinic for complete follow-up These patients were treated with podophyllum resin only

TABLE 2—*Time Required for Cure of Infections*

Cures Achieved in Microsporum (M) Audouini Infections

Length of Time	No of Patients
2-4 weeks	4
1 2 mo	3
2 3 mo	0
3-4 mo	4
4 5 mo	9
6-7 mo	2
Total	22

Cures Achieved in Microsporum (M) Lanosum Infections

Length of Time	No of Patients
2-4 weeks	3
1 2 mo	2
2-3 mo	2
Total	7

Cure Achieved in Unidentified Endothrix Infection

Length of Time	No of Patients
1 2 mo	1

TABLE 3—*Cures Achieved in M Audouini Infections*

Length of Time After X Ray Epilation	No of Patients
2-4 weeks	5
1 2 mo	11
2-3 mo	3
3-4 mo	3*
5-6 mo	1†
6-7 mo	1
Total	24

* One patient had x ray epilation two years prior to the podophyllum resin treatment Various local medications were applied unsuccessfully

† One patient had x ray epilation eight months prior to the podophyllum resin treatment Various local medications were applied unsuccessfully

On the other hand, in a series of 32 patients treated with x-ray epilation and subsequent podophyllum resin application cures were achieved in 26 (81 3%), improvement in 3 (9 4%), and no change was observed in 3 cases (9 4%) While the percentage of cures resulting from treatment that combined x-ray epilation with podophyllum resin application was larger, one should not lose sight of the additional time which was required for this combined treatment (table 3) Each patient who was epilated was treated previously for two months with podophyllum resin ointment, and epilation was instituted only in cases in which the local response was unsatisfactory It is of added importance that in the two series the infected areas were similar in size and distribution and that the previous local therapy and subsequent x-ray epilation did not shorten the course of the disease The fact that children epilated by x-ray had two-months' treatment preceding epilation adds two months to the total length of treatment In both M audouini and M lanosum infections the shortest time for cure was between two and four weeks, and the longest was seven months While seven-months' treatment is not unusual for infections due to M audouini (Schwartz reported up to 10 mo), it is rather uncommon in M lanosum infections However, the fact that M lanosum hardly ever produced an inflammatory reaction in the children reported is indicative of an adaptation to the human host and a behaviour similar to M audouini

While we do not consider podophyllum resin the ideal solution for the treatment of tinea capitis, it is worth considering in our therapeutic armamentarium This is particularly true in instances in which further treatment is necessary after x-ray epilation and in which small isolated areas are being treated over a considerable length of time

SUMMARY

A report is submitted of 121 cases of tinea capitis treated with a 0 2% resin of podophyllum ointment alone and in combination with x-ray epilation Fifty-six patients were cured, 26 with x-ray epilation combined with podophyllum resin treatment and 30 with podophyllum resin treatment alone, 19 improved, and 21 showed no change The agent was useful in some cases of tinea capitis due to M audouini, M lanosum, T crateriforme, and T sulfureum The length of time required to achieve clinical cure in those cases in which podophyllum resin ointment was used alone did not differ appreciably from the length of time required in those cases in which both podophyllum resin and x-ray epilation were used

TABLE 4—*Analysis of Results in Patients Treated with Podophyllum Resin and with Podophyllum Resin and X-Ray*

	Cured		Improved		No Change		Spread		Totals	
	No	Per Cent	No	Per Cent	No	Per Cent	No	Per Cent	No	Per Cent
Podophyllum resin and x ray	26	81.3	3	9 4	3	9 4	0	0	32	100%
Podophyllum resin alone	30	42.0	16	21 9	18	24 7	9	12.3	73	100%
Total	56	53 3	19	18 1	21	20 0	9	8 6	105	100%

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2 Schwartz, L Peck, S Bosvinick I Leibovitz, A L and Frasier E S Control of Ringworm of the Scalp Among School Children in Hagerstown, Maryland 1944-45 United States Pub Health Bulletin No 294 Federal Security Agency Public Health Service 1946

3 Combes, F C Zuckerman R and Bobroff A Copper Undecylenate in the Treatment of Dermatomycoses J Invest Dermat 10 447 1948

PROTHROMBIN TIME DETERMINATIONS ON PATIENTS WITH MYOCARDIAL INFARCTION

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and
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Recent investigations of the value of anticoagulants in myocardial infarction have indicated the need for a critical analysis of the blood-clotting mechanism in this disease [1] Observations have been reported [2] which suggest that there is an increased tendency toward a coagulation associated with coronary thrombosis Certain studies have yielded evidence that "hyperprothrombinemia" (in reality a summation of factors producing a shortening of the prothrombin time) is one of the factors responsible for the increased clotting tendency [3] The importance of careful inquiry into whether such a state actually exists in patients with coronary thrombosis becomes obvious when the use of the anticoagulant drugs for both treatment and prophylaxis is being considered Opportunity to observe daily prothrombin times in patients in whom coronary occlusion with myocardial infarction developed was afforded us during studies of the use of bishydroxycoumarin (dicumarol®) in this syndrome The data obtained from observations of a group of patients with coronary disease and myocardial infarction, who served as controls and hence did not receive anticoagulants, are presented in this report

HISTORY

The occurrence of thromboembolic complications in myocardial infarction was emphasized in 1937 by Blumer,[4] who reported an incidence of mural thrombi in 50% of his cases Master, Dack, and Jaffe,[5] Falk,[6] Nay and Barnes,[7] and many others, observing different series of patients with myocardial infarction due to coronary occlusion, found significantly high percentages of thromboembolic complications

Observations made to determine whether an abnormal clotting tendency exists in the blood of patients with coronary disease or myocardial infarction have yielded conflicting data Various methods have been employed to investigate the clotting mechanism, ranging from simple determinations of prothrombin time, based on the method of Quick, to the more complex heparin-retardation tests described by Waugh and Ruddick,[8] and the heparin tolerance test of de Takats,[2b] which seems to demonstrate an increased tendency toward coagulation

What has been labeled as hyperprothrombinemia was observed in patients with thromboembolic disease by Shapiro [3] in 1944 Hines and Kessler [9] noted short prothrombin times in eight patients with either coronary or cerebral thrombosis Meyers and Poindexter [10] studied prothrombin times in arteriosclerotic patients employing the Link-Shapiro modification of Quick's method Determinations run every three days for six weeks on 13 patients with acute coronary occlusion revealed no change in the undilute-prothrombin times, but a shortening of one to ten seconds in the dilute-prothrombin times of 10 patients occurred from 24 to 72 hours after the occlusion Prothrombin times determined monthly in 28 patients with coronary sclerosis showed no definite trend Similar shortening of the dilute-prothrombin time in patients with acute coronary occlusion was demonstrated by Peters, Guyther, and Brambel,[11] who found increased prothrombin activity in three of every four persons with coronary occlusion

On the other hand, Cotlove and Vorzimer,[12] using the Link-Shapiro modification of the one-stage method of Quick to determine the prothrombin time, could find no characteristic alteration in the prothrombin time in patients with coronary occlusion or in patients with repeated attacks of angina pectoris Similarly, Tuft and Rosenfield [13] were unable to detect an acceleration of the prothrombin-clotting time in diluted plasma in thromboembolic diseases

METHOD

Prothrombin times were determined by the Link-Shapiro [3] modification of the Quick [14] one stage method The method as routinely used in our laboratory has been previously described [15] Daily prothrombin time determinations were done when possible on whole (100%) plasma and diluted (12 5%) plasma The prothrombin time determinations reported here are on diluted (12 5%) plasma All tests were performed on blood samples taken in the morning and were completed within two hours after the specimens were drawn Seventeen persons with myocardial infarction were used in this study These patients served as controls in the studv at the New York Hospital and hence did not receive anticoagulants The criteria for the diagnosis of

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From the Department of Medicine of Cornell University Medical College and New York Hospital

Conducted under the auspices of the Committee on Anticoagulants of the American Heart Association

This work has been made possible through grants from the Kress Foundation the Lasker Foundation the Hyde Foundation and the Hampil Foundation

Miss M E Todd and Miss K Taylor assisted in this investigation and Miss P Buckley did the statistical analysis under the direction of Dr D F Beck.

[1] Wright I S Experiences with Dicumarol in Treatment of Coronary Thrombosis Proc Am Federation Clin Res **2** 101 1945 Nichol E S and Page S W Jr Dicumarol Therapy in Acute Coronary Thrombosis Results in 50 Attacks J Florida M A **32**:365 1946 Wright I S Marple C D and Beck D F Anticoagulant Therapy of Coronary Thrombosis with Myocardial Infarction, J A M A **138** 1074 (Dec 11) 1948

[2] (*a*) de Takats G and Gilbert N C The Response to Heparin A Test of the Clotting Mechanism J A M A **121** 1246 (April 10) 1943 (*b*) de Takats G Heparin Tolerance Surg Gynec & Obst. **77** 31 1943

[3] Shapiro S Hyperprothrombinemia A Premonitory Sign of Thromboembolization (Description of a Method) Exper Med. & Surg. **2** 103 1944 Brambel C E Thromboplastic Reagent, Arch Surg. **50** 137 1945

[4] Blumer G Importance of Embolism as Complication of Cardiac Infarction Ann Int Med **11** 499 1937

[5] Master A M Dack, S and Jaffe H L Age Sex and Hypertension in Myocardial Infarction Due to Coronary Occlusion Arch Int Med **64** 767 (Oct) 1939

[6] Falk, O P J Causes and Prevention of Sudden Death in Coronary Disease J A M A **119** 1250 (Aug 15) 1942

[7] Nay R M and Barnes A R Incidence of Embolic or Thrombotic Processes During Immediate Convalescence from Acute Myocardial Infarction Am. Heart J **30** 65 1945

[8] Waugh T R and Ruddick D W Test for Increased Coagulability of the Blood Canad M A J **50** 547 1944

[9] Hines L E and Kessler D L Venesection for Plethoric Patient Arch. Int Med **75** 248 (April) 1945

COMMENT

From the results obtained it is obvious that podophyllum resin is as efficacious as many other drugs applied in the past In addition to its antifungal activity a mild inflammatory reaction is observed in some

TABLE 2 —*Time Required for Cure of Infectio*

Cures Achieved in Microsporum (M) Audouini Infectio

Length of Time	P
2-4 weeks	
1 2 mo	
2-3 mo	
3-4 mo	
4 5 mo	
6-7 mo	
Total	

Cures Achieved in Microsporum (M)

Length of Time
2-4 weeks
1 2 mo
2 3 mo
Total

Cure Achieved in

Length of Time
1 2 mo

TABLE 3 —*Cu*

Length of T After X Ray
2-4
1 2
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between these groups ex
times for this sample of c
preciably lower on the aver
mal persons used as controls
way however reveal the reaso
ference

*n Seconds**

[illegible]	[illegible]	Range	Standard Error of Mean	Standard Deviation	Stand of St Devia
[illegible]	[illegible]	27.0-43 0	± 0.90	3.83	± 0 [illegible]
[illegible]	[illegible]	27 0-39 0	± 0 65	3 12	± 0 46
[illegible]	[illegible]	22.0-39 0	± 0.81	3.70	± 0.57
[illegible]	29.9	24.0-40.5	± 1 01	4 16	± 0 71
[illegible]	30.10	24 4-39.5	± 0.81	3 88	± 0.57
[illegible]	33.58	27.4-42 1	± 0.93	4 45	± 0 60
[illegible]	32 07	24 4-39 0	± 0.80	4.88	± 0.63
17	31 13	25 4-35.8	± 0 70	2 70	± 0 49
6	31 25	30 0-40.0	± 1 72	3.85	± 1.22
10	32 45	20 4-38.6	± 0.88	3.30	± 0.62
18	30 16	25.0-34.9	± 0.56	2.32	± 0 40
10	32 78	30 1-38.8	± 0.83	2 48	± 0.59
16	30 44	20 7-38.3	± 1 03	3.90	± 0 73
30	35.52	26 4-50 0	± 0.80	4.30	± 0.56
12	34.85	26 4-48.2	± 1.50	5.28	± 1.12
20	34 90	26 4-43.2	± 1 00	4.38	± 0 71
40	31.23	22.0-37.0	± 0.53	3.33	± 0.37
339	32.20	20 7-50 0	± 0.23	4.22	± 0 16
813	38.6	32 -42	± 0 08	2 16	± 0 05

* Based on ungrouped data

standard deviation was 0 16 In the 813 determinations on the normal group the mean was 38 6 with a range of 32 to 42 sec The standard deviation was 2 16 The standard error of the mean was and the standard error of the standard deviation was 0 05

Table 2 shows the number and percentage distribution of the prothrombin times for the two groups

COMMENT

When the mean of the dilute-prothrombin times for these coronary patients was compared with that for the normal persons sampled, the difference was found to be highly significant statistically (Table 1) In other words, it was found that if the true difference between these means had been zero, the probability of obtaining a mean for coronary patients 6 3 sec or more lower than

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Prothrombin Clotting Time Sec	Number of Readings		Per Cent of Total Readings	
	Patients	Normal Persons	Patients	Normal Persons
20 *	1		0.3	
21				
22	2		0.6	
23				
24	6		1.8	
25	7		2.1	
26	12		3.5	
27	17		5.0	
28	22		6.5	
29	26		7 7	
30	47		13.9	
31	29		8.5	
32	31	5	9 1	0.6
33	22	18	6.5	2.2
34	26	33	7 7	4 1
35	28	45	8.3	5.5
36	17	75	5.0	9.2
37	9	120	2.6	14.8
38	11	162	3.2	19.9
39	11	146	3.2	18 0
40	6	90	1.8	11.1
41	2	69	0 6	8.5
42	1	50	0.3	6 1
43	5			
44				
45				
46				
47				
48				
49				
50	1		0.3	
Total readings	339	813	100 0	100 0

* Defined as 20.0 to 20.9 inclusive

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10 Meyers L. and Poindexter C A Study of Prothrombin Time in Normal Subjects and in Patients with Arteriosclerosis Am Heart J 31:27 1946

11 Peters H R Guyther J R. and Brambel, C. E Dicumarol in Acute Coronary Thrombosis J A M A, 130:398 (Feb 16) 1946

12. Cotlove E. and Vorzimer J J Serial Prothrombin Estimations in Cardiac Patients Diagnostic and Therapeutic Implications Use of Dicumarol Ann Int. Med 24:648 1946

13 Tuft, H. S and Rosenfield R E Significance of the Accelerated Reaction in Determination of Prothrombin Time of Diluted Plasma Am J Clin Path. 17 704 1947

14 Quick, A. J Hemorrhagic Diseases and Physiology of Hemostasis Ill. Charles C Thomas Publisher 1942, p 312

15 Overman, R. S Newman A A and Wright I, S Plasma Pro- Times in Normal Human Subjects Am. Heart J 39:56 1950

The prothrombin times of whole (100%) plasma are not reported here, because the results are not so clear-cut as those of diluted plasma and if there is a change from normal it is very slight The data on whole (100%) plasma prothrombin times and their significance will be reported in a subsequent communication

In Table 2 the number and percentage distribution of the prothrombin times on diluted (12 5%) plasma for the patients with coronary disease and for normal persons are given It should be noted that the distribution range of prothrombin times on the coronary patients is greater (20 7 to 50 sec) than that of the normal group (32 to 42 sec) This wide distribution range in the coronary group makes any single prothrombin time determination of limited value, but when four or five determinations are done on the same patient over a period of several days the tendency for a shortened diluted-plasma prothrombin time usually becomes apparent

SUMMARY

The dilute (12 5%) plasma prothrombin times of a group of patients with myocardial infarction are compared with those of a group of normal persons The group with myocardial infarction showed a mean prothrombin time of 32 29 sec The mean of the normal group was 38 6 sec This difference is statistically highly significant

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EFFECTS OF ULTRAVIOLET-RAY IRRADIATION ON CLOTTING MECHANISM OF PLASMA

Sherman R Kaplan, M D

and

Irving A Friedman, M D , Chicago

Ultraviolet-ray irradiation of human plasma was introduced for sterilizing purposes after recognition of the fact that homologous serum jaundice could be transmitted in this medium Several studies attest to its efficacy in eliminating the virus of homologous serum jaundice [1] and to its safety [2] Recently Cutler, Burbank, and Marzullo [3] reported alterations in the clotting mechanism of irradiated plasma, attributing this to irradiation with ultraviolet rays of 1,849 A , and suggested that such plasma had anticoagulant properties

That certain components of liquid plasma deteriorate with age has been shown in the past [4] At the end of three months the prothrombin concentration is approximately 17% of normal, although the fibrinogen content is still intact. By the end of six months, the prothrombin level is down to 2%, and the fibrinogen has completely disappeared The alterations in the clotting mechanism which Cutler and his associates describe are attributed to the effect of irradiation with short ultraviolet rays We have found that the "MR plasma" used by them refers to liquid plasma collected in September, 1948, and June, 1949 The latter plasma furthermore had been diluted with an equal volume of 5% dextrose in isotonic sodium chloride solution From the evidence cited [4] relative to the deterioration of fibrinogen, such aged and diluted liquid plasma should not be expected to clot upon the addition of thrombin, regardless of ultraviolet-ray irradiation The "complex mechanism" proposed by Cutler and others to explain the ability of 0 3 cc of irradiated plasma to prevent the clotting of 1 0 cc of venous blood is thought untenable No consideration was given by them to the presence of sodium citrate in the plasma, which would be expected to interfere with the in vitro clotting of venous blood Because of these facts, some of the aspects of the coagulation mechanism of irradiated liquid plasma were reinvestigated

MATERIAL AND METHODS

The human plasma used in this study was processed in accordance with the requirements of the National Institutes of Health Ultraviolet-ray irradiation was performed according to the method of Oppenheimer and Levinson [5] Samples of plasma of varying ages, both irradiated and unirradiated, were submitted as unknowns Aliquot fractions, before and after irradiation, were included Prothrombin determinations were done as prescribed by the one-stage method of Quick [6] Thromboplastin was prepared by acetone extraction of human brain The thrombin and heparin used were commercially available compounds [7] in concentrations of 200 units and 10 mg per cubic centimeter, respectively Fresh defibrinated serum was obtained by whipping with glass beads Human serum was prepared in accordance with the method approved by the National Institutes of Health and irradiated in the same manner as the plasma Fibrinogen was prepared according to the method of Ware, Guest, and Seegers [8]

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[1] Oliphant J W Jaundice Following Administration of Human Serum Harvey Lect. (1943 1944) 39:254 (Aug.) 1944 Blanchard M. C. Stokes J Jr, Hampil B Wade G R. and Spizizen J Methods of Protection Against Homologous Serum Hepatitis II The Inactivation of Hepatitis Virus SH with Ultraviolet Rays J A M A. 138:341 (Oct 2) 1948

[2] Wolf A M Mason J Fitzpatrick, W J Schwartz, S O and Levinson S O Ultraviolet Irradiation of Human Plasma to Control Homologous Serum Jaundice J A M A 135 476 (Oct 25) 1947

[3] Cutler S S Burbank B and Marzullo E R Hypocoagulability of Certain Irradiated Plasmas J A M A. 143:1057 (July 22) 1950

[4] Taylor F H L. Lozner E L. Davidson C S Tagnon H J and Newhouser L. R. Preservation of Normal Human Plasma in Liquid State Comparative In Vitro Studies on Physiologic Activity of Labile Constitutents of Liquid and Frozen Plasma J Clin Invest 23:351 (May) 1944

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[6] Quick A. J Clinical Application of Hippuric Acid and Prothrombin Tests Am J Clin Path 10 222 (March) 1940

[7] Thrombin Topical produced by Parke Davis & Company and Heparin Sodium produced by Abbott Laboratories

[8] Ware A G Guest, M. M and Seegers W H Fibrinogen with Special Reference to Its Preparation and Certain Properties of Product Arch Biochem 13:231 (May) 1947

myocardial infarction were those set up by the Committee for the Evaluation of Anticoagulants in the Treatment of Coronary Thrombosis with Myocardial Infarction of the American Heart Association For comparison data, 813 control prothrombin times on 25 normal persons previously reported have been used

OBSERVATIONS

The data on 12 5% diluted plasma prothrombin times on the 17 patients with myocardial infarction and on the 25 normal persons are shown in Table 1 The mean of the 339 determinations on the group with coronary disease was 32 29 sec, with a range of 20 7 to 50 sec The standard deviation was 4 22 The standard error of the mean was 0 23, and the standard error of the standard deviation was 0 16 In the 813 determinations on the normal group the mean was 38 6 sec, with a range of 32 to 42 sec The standard deviation was 2 16 The standard error of the mean was 0 08, and the standard error of the standard deviation was 0 05

TABLE 1 —*Prothrombin Times on 12.5% Plasma in Seconds**

Patients with coronary disease	No of Determinations	Mean	Range	Standard Error of Mean	Standard Deviation	Standard Error of Standard Deviation
A V	10	33 08	27.6-43 0	± 0 99	3.83	± 0 70
S P	24	33 08	27 0-39 0	± 0 65	3 12	± 0 46
R H B	23	30 07	22.9-39 0	± 0 81	3 70	± 0.57
S S	18	29.92	24.0-40.5	± 1 01	4 16	± 0 71
C V	24	30.16	24 4-39.5	± 0.81	3 88	± 0.57
M J	24	33.68	27.4-42 1	± 0.93	4 45	± 0 66
O B	25	32 07	24 4 39 6	± 0.89	4.38	± 0.63
R P	17	31 13	25 4-35.8	± 0 70	2 79	± 0 49
G D	6	31 25	30 0-40 0	± 1 72	3.85	± 1.22
A H	16	32 45	26 4-38.6	± 0.88	3.89	± 0.62
M M	18	30 16	25 0-34.9	± 0.56	2.32	± 0 40
C A	10	32 78	30 1-38 8	± 0.83	2 48	± 0.59
P	16	30 44	20 7-39.3	± 1 03	3 99	± 0 73
C F	30	35.62	26 4-50 0	± 0.80	4.30	± 0.56
L M	12	31.85	26 4-48.2	± 1.59	5.28	± 1.12
S L	20	34.00	26 4-43.2	± 1 00	4.38	± 0 71
R I	10	31.23	22.6-37 0	± 0.53	3.33	± 0.37
All patients	339	32.29	20 7-50 0	± 0.23	4.22	± 0 16
25 normal persons	813	38 6	32 -42	± 0 08	2 16	± 0 05

* Computations based on ungrouped data

Table 2 shows the number and percentage distribution of the prothrombin times for the two groups

COMMENT

When the mean of the dilute-prothrombin times for these coronary patients was compared with that for the normal persons sampled, the difference was found to be highly significant statistically (Table 1) In other words, it was found that if the true difference between these means had been zero, the probability of obtaining a mean for coronary patients 6 3 sec or more lower than that for normal patients would be less than 1 in 1,000 In fact, the chances that the mean for coronary patients would have exceeded 33 0 sec, or that for normal patients fallen below 38 0 sec, were in each case exceedingly slight. Since the laboratory procedures were identical, except for minute random fluctuations in technic, it must be concluded that some real difference between these groups exists, the dilute prothrombin times for this sample of coronary patients being appreciably lower on the average than those of the normal persons used as controls This test does not in any way, however, reveal the reason for the observed difference

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Prothrombin Clotting Time Sec	Number of Readings		Per Cent of Total Readings	
	Patients	Normal Persons	Patients	Normal Persons
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21				
22	2		0 6	
23				...
24	6		1.8	
25	7		2.1	
26	12		3.5	
27	17		5 0	
28	22		6.5	
29	26		7 7	
30	47		13.9	
31	29		8 5	
32	31	6	9 1	0 6
33	22	18	6.5	2.2
34	26	33	7 7	4 1
35	28	45	8.3	5.5
36	17	75	5.0	9.2
37	9	120	2 6	14.8
38	11	162	3.2	19.9
39	11	146	3.2	18 0
40	6	90	1.8	11 1
41	2	69	0 6	8.5
42	1	50	0.3	6 1
43	5			
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47				
48				
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Total readings	339	813	100 0	100 0

* Defined as 20 0 to 20.9 inclusive

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That certain components of liquid plasma deteriorate with age has been shown in the past.[4] At the end of three months the prothrombin concentration is approximately 17% of normal, although the fibrinogen content is still intact. By the end of six months, the prothrombin level is down to 2%, and the fibrinogen has completely disappeared The alterations in the clotting mechanism which Cutler and his associates describe are attributed to the effect of irradiation with short ultraviolet rays We have found that the "MR plasma" used by them refers to liquid plasma collected in September, 1948, and June, 1949 The latter plasma furthermore had been diluted with an equal volume of 5% dextrose in isotonic sodium chloride solution From the evidence cited [4] relative to the deterioration of fibrinogen, such aged and diluted liquid plasma should not be expected to clot upon the addition of thrombin, regardless of ultraviolet-ray irradiation The "complex mechanism" proposed by Cutler and others to explain the ability of 0 3 cc of irradiated plasma to prevent the clotting of 1 0 cc of venous blood is thought untenable No consideration was given by them to the presence of sodium citrate in the plasma, which would be expected to interfere with the in vitro clotting of venous blood Because of these facts, some of the aspects of the coagulation mechanism of irradiated liquid plasma were reinvestigated

MATERIAL AND METHODS

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[3] Cutler S S Burbank B and Marzullo E R Hypocoagulability of Certain Irradiated Plasmas J A M A 143:1057 (July 22) 1950

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[8] Ware A G Guest, M M and Seegers W H Fibrinogen with Special Reference to Its Preparation and Certain Properties of Product Arch Biochem 13 231 (May) 1947

RESULTS

Six sets of experiments were performed The first experiment was done to determine the effect of ultraviolet-ray irradiation (utilizing 1,849 A) on the clotting mechanism of fresh liquid plasma Aliquot samples of plasma before and after irradiation were compared with a fresh oxalated control sample (Table 1) The results show the clotting mechanism of the irradiated plasma to be identical with the aliquot unirradiated sample and the control sample

TABLE 1 —*Effect of Ultraviolet-Ray Irradiation on Clotting of Fresh Liquid Plasma*

	Sample A (From a Single Unirradiated 4 Day Old Plasma Sample)	Sample B (Same as A Except Irradiated)	Sample C (Control Sample of Fresh Unirradiated 1 Day-Old Plasma)
Prothrombin time sec	15 0 15.2	14 4 15 0	15 0 15 0
1 unit thrombin added to 1 cc plasma	29 0 sec (firm clot)	35 0 sec (firm clot)	31 0 sec (firm clot)
1 mg heparin and 10 units thrombin added to 1 cc plasma	50 0 sec fibrin strands	40 0 sec fibrin strands	32 0 sec (firm clot)
1 mg heparin and 20 units thrombin added to 1 cc plasma	85 0 sec (firm clot)	40 0 sec (firm clot)	

The second set of experiments were undertaken to determine the effect of ultraviolet-ray irradiation on the clotting mechanism of three-month-old liquid plasma Aliquot samples, before and after irradiation, were compared with a fresh oxalated control sample (Table 2) The results showed the clotting mechanism of both the irradiated and unirradiated samples to be inferior to that of the control sample The unirradiated aliquot in each instance revealed a more competent clotting mechanism than its respective irradiated aliquot. This was equally true of plasma treated with ultraviolet rays of 1,849 A. and 2,537 A

The third set of experiments compared the clotting mechanism of fresh liquid plasma with that of liquid plasma older than six months, in both the irradiated and unirradiated state (Table 3) All of the older samples, both irradiated and unirradiated, showed the same deterioration of the essential clotting elements

TABLE 2 —*Effect of Ultraviolet-Ray Irradiation on Clotting of Three-Month-Old Liquid Plasma*

	Pool of 29 Plasma Samples		Pool of 31 Plasma Samples		Pool of 32 Plasma Samples		Pool of 20 Plasma Samples		Pool of 32 Plasma Samples		Pool of 26 Plasma Samples		Pool of 30 Plasma Samples		Pool of 32 Plasma Samples		Control Samples
	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated*	Unirradiated	Irradiated	
Prothrombin time (sec)	19 6 20 0	21.2 21.8	22 0 21 6	20 8 20.2	18 0 18 6	22 4 21.9	18 2 17 8	21 0 20.2	18 4 18.2	20 0 19.8	20 0 19 4	19.8 20.8	19 0 18 6	21.2 21.8	18.8 19 4	20 4 20.2	12.0 12.2
Clotting time (sec) when 1 unit thrombin added to 1 cc. plasma	53 4 54 0	70 0 71 0	67 0 60 0	93 0 100 0	60 0 61 0	100 0 105 0	65 0 68 0	105 0 110 0	59 0 62 0	80 0 83 0	67 0 70 0	78 0 80 0	63 0 67 0	102 0 110.0	82 0 90.0	110.0 120 0	21 0 22.2
Clotting time (sec.) when 1 mg heparin added to 1 cc plasma with units thrombin added																	
1	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	
2	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	
10	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	25.0
20	No clot	No clot	No clot	No clot	No clot	No clot	10 0	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	
40	5 0	12.0	6 0	16 0	9 0	13 0		6 0	13 0	20 0	7 0	21 4	14.0	16 0	6.0	17.0	

* Irradiation with 2 537 A only

TABLE 3 —*Effect of Age on Clotting of Liquid Plasma*

	Control Sample (Fresh Unirradiated 1 Day Old Plasma)	Sample D (Single Sample Unirradiated 1 Day-Old Plasma)	Sample E (Pool of 8 Samples Unirradiated 2 Day Old Plasma)	Sample F (Single Sample Unirradiated 10 Mo Old Plasma)	Sample G (Single Sample Unirradiated 40-Mo -Old Plasma)	Sample H (Single Sample Unirradiated 50-Mo Old Plasma)	Sample I (Single Sample Irradiated 1 Day Old Plasma)	Sample J (Pool of 34 Samples Irradiated 7 Mo Old Plasma)	Sample K (Pool of 33 Samples Irradiated 10-Mo -Old Plasma)	Sample L (Single Sample Irradiated 21 Mo Old Plasma)	Sample M (Single Sample Irradiated 28-Mo -Old Plasma)	Sample N (Single Sample Irradiated 34-Mo -Old Plasma)
Prothrombin time (sec)	13.8 13.8	15.2 15 4	14 0 14 4	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	17 0 17.0	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr
Clotting time (sec) when 1 unit thrombin added to 1 cc. plasma	21 0 21.5 (firm clot)	20 0 20 0 (firm clot)	20 0 20.8 (firm clot)	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	22 0 22 4 (firm clot)	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr
20 units 40 units 200 units added				No clot	No clot	No clot		No clot	No clot	No clot	No clot	No clot
Clotting time (sec) when 1 mg heparin and 10 units thrombin added to 1 cc plasma	12.2 13 0	23 0 23.2	23 0 23 6	No clot	No clot	No clot	21 0 21 0	No clot	No clot	No clot	No clot	No clot
Clotting time (sec.) when 1 mg heparin and 20 units thrombin added to 1 cc plasma	4 0 4.8	8 4 0 0	8 0 8 4	No clot	No clot	No clot	8.8 9 2	No clot	No clot	No clot	No clot	No clot

To explain the failure of clot formation in the older liquid plasmas, the fourth set of experiments was performed (Table 4) The addition of either 0 3 cc of irradiated serum (fibrinogen-free) or 0 3 cc of fresh unirradiated defibrinated serum to a mixture of 20 units of thrombin and 1 cc of plasma failed to produce a clot However, with the addition of 0 1 cc of fibrinogen to this mixture, four of the samples of [illegible] plasma clotted By increasing the fibrinogen to 0 3 cc , [illegible] clotting took place in three other samples, and with the addition of 0 5 cc of fibrinogen the last plasma clotted The amount of fibrinogen needed to produce clotting bore no direct relationship either to the age (these being all old plasmas) or to the exposure to irradiation This would suggest that changes other than those already noted occur in aging plasma

The fifth experiment was undertaken to explain the inhibition of clotting of 1 cc of venous blood by the addition of 0 3 cc of irradiated plasma Because Cutler and others noted this phenomenon, they postulated "complex changes" due to ultraviolet-ray irradiation The results of this experiment reveal that a similar quantity of unirradiated plasma also will prevent 1 cc of venous blood from clotting Amounts of 0 3 cc of each of seven fresh irradiated and six fresh unirradiated samples of plasma were added individually to 1 cc quantities of fresh whole blood obtained from 10 normal donors No clot was noted in any of the mixtures at the end of 24 hr Clot formation is also prevented when sodium citrate in serum or isotonic sodium chloride solution, in a concentration similar to that found in citrated plasma, is added to fresh whole blood Quantities of 0 3 cc of citrated isotonic sodium chloride solution and citrated irradiated serum were added to 1 cc of fresh whole blood, and again no clot was noted at the end of 24 hr Clot inhibition of fresh blood, therefore, as observed by Cutler and others, is due solely to the excess citrate and does not depend upon the substrate added

In the sixth experiment 600 cc of irradiated liquid plasma, aged 4, 7, 9, and 10 mo , was administered to each of five recipients Clotting times were determined 48 hr , 24 hr , and immediately prior to administration and at intervals of 1, 2, 24, 48, and 72 hr following the start of the infusion No prolongation of the clotting times could be demonstrated (Table 5)

TABLE 4 —*Effect Produced by Addition of Fibrinogen to Aged Liquid Plasma*

	Sample F (Single Sample Unirradiated 10-Mo Old Plasma)	Sample G (Single Sample Unirradiated 40-Mo -Old Plasma)	Sample H (Single Sample Unirradiated 50-Mo Old Plasma)	Sample J (Pool of 34 Samples Irradiated 7 Mo -Old Plasma)	Sample K (Pool of 33 Samples Irradiated 10-Mo Old Plasma)	Sample L (Single Sample Irradiated 21 Mo -Old Plasma)	Sample M (Single Sample Irradiated 28-Mo -Old Plasma)	Sample N (Single Sample Irradiated 34 Mo Old Plasma)
20 units thrombin 1 cc. plasma and 0.3 cc irradiated serum	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 24 hr	No clot in 48 hr	No clot in 48 hr
20 units thrombin, 1 cc plasma and 0.3 cc defibrinated fresh serum	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 24 hr	No clot in 48 hr	No clot in 48 hr
Clotting time (sec) with 20 units thrombin 1 cc plasma 0.3 cc. irradiated serum and 0.1 cc fibrinogen	No clot in 48 hr	60.0 61 0	No clot in 48 hr	17 0	8 0	16 2 15 4	No clot in 48 hr	No clot in 48 hr
Clotting time (sec) with 20 units thrombin 1 cc plasma 0.3 cc fresh defibrinated serum and 0.1 cc. fibrinogen	No clot in 48 hr	60 0 58 0	No clot in 48 hr	20 0	10 0	17 4 18.6	No clot in 48 hr	No clot in 48 hr
Clotting time (sec) with 20 units thrombin 1 cc plasma and								
(*a*) 0.1 cc. fibrinogen	No clot in 48 hr	58 0 60.4	No clot in 48 hr	8 0	6 0	15.2 16 0	No clot	No clot
(*b*) 0.3 cc fibrinogen	7		61				40	No clot
(*c*) 0.5 cc fibrinogen								40 0 45 0

TABLE 5 —*In Vivo Effect of Injection of Irradiated Aged Liquid Plasma on Clotting Mechanism*

			Preinfusion Clotting Time						A †		B ‡		Postinfusion Clotting Time					
			48 Hr		24 Hr		Immediate		1 Hr		2 Hr		24 Hr		48 Hr		72 Hr	
Patient	Plasma No	Age	Min	Sec	Min.	Sec	Min	Sec	Min	Sec	Min	Sec	Min	Sec	Min	Sec	Min	Sec
1	SP2105	9 mo	7 9	10 20	10 9	20 15	12 13		11 12	 30	14 15	30	8 10	30 30	11 12	30 5	6 10	30 30
2	SP2140	9 mo	8 11	40 5	10 12	10 15	12 12	 15	12 14	15 30	11 14	 30	11 11	15 40	Not taken		Not taken	
3	SP2772	4 mo	9 9	10 5	11 11	5 15	9 9	15 30	9 11	35 5	10 11	 30	8 9	30 5	11 12	35 50	11 13	5 30
4	SP2607	7 mo	12 13	30 22	14 14	15 25	Not taken		10 11	20 40	12 15	35 20	10 11	11 20	9 9	30	Not taken	
5	SP2078A	10 mo	11 11	10 40	11 11	 15	11 18	30	10 12	45	12 11	20 45	10 11	45 10	6 9	20	11 10	30 5

* Clotting time determined by Lee-White method
† Infusion started
‡ Infusion completed

COMMENT

Our reinvestigation of Cutler and others work has revealed that the clotting of fresh irradiated plasma is practically the same as that of an aliquot unirradiated sample In older plasma, in which prothrombin and fibrinogen deterioration has begun but is not yet complete, the procedure of ultraviolet-ray irradiation does alter the clotting mechanism This alteration is of the magnitude of fractions of a minute and is produced by ultraviolet rays of both 1,849 A and 2,537 A Whether this effect is due to the actual irradiation or is ascribable to the mechanical trauma inherent in the procedure is as yet undetermined The inability of aged plasma to clot is due to fibrinogen deterioration and not to irradiation with ultraviolet rays of 1 849 A , for similar changes are noted in both irradiated and unirradiated plasmas Furthermore, these changes can be completely reversed in

RESULTS

Six sets of experiments were performed The first experiment was done to determine the effect of ultraviolet-ray irradiation (utilizing 1,849 A) on the clotting mechanism of fresh liquid plasma Aliquot samples of plasma before and after irradiation were compared with a fresh oxalated control sample (Table 1) The results show the clotting mechanism of the irradiated plasma to be identical with the aliquot unirradiated sample and the control sample

The second set of experiments were undertaken to determine the effect of ultraviolet-ray irradiation on the clotting mechanism of three-month-old liquid plasma Aliquot samples, before and after irradiation, were compared with a fresh oxalated control sample (Table 2) The results showed the clotting mechanism of both the irradiated and unirradiated samples to be inferior to that of the control sample The unirradiated aliquot in each instance revealed a more competent clotting mechanism than its respective irradiated aliquot. This was equally true of plasma treated with ultraviolet rays of 1,849 A and 2,537 A

The third set of experiments compared the clotting mechanism of fresh liquid plasma with that of liquid plasma older than six months, in both the irradiated and unirradiated state (Table 3) All of the older samples, both irradiated and unirradiated, showed the same deterioration of the essential clotting elements

To explain the failure of clot formation in the older liquid plasmas, the fourth set of experiments was performed (Table 4) The addition of either 0 3 cc of irradiated serum (fibrinogen-free) or 0 3 cc of fresh unirradiated defibrinated serum to a mixture of 20 units of thrombin and 1 cc of plasma failed to produce a clot However, with the addition of 0 1 cc of fibrinogen to this mixture, four of the samples of [illegible] plasma clotted By increasing the fibrinogen to 0 3 cc , [illegible] clotting took place in

TABLE 1 —*Effect of Ultraviolet-Ray Irradiation on Clotting of Fresh Liquid Plasma*

	Sample A (From a Single Unirradiated 4 Day Old Plasma Sample)	Sample B (Same as A Except Irradiated)	Sample C (Control Sample of Fresh Unirradiated 1 Day-Old Plasma)
Prothrombin time sec	15 0 15 2	14.4 15 0	15 0 15 0
1 unit thrombin added to 1 cc plasma	29 0 sec (firm clot)	35 0 sec (firm clot)	31 0 sec (firm clot)
1 mg heparin and 10 units thrombin added to 1 cc plasma	50 0 sec fibrin strands	40 0 sec fibrin strands	32 0 sec (firm clot)
1 mg heparin and 20 units thrombin added to 1 cc plasma	35 0 sec (firm clot)	40 0 sec (firm clot)	

TABLE 2 —*Effect of Ultraviolet-Ray Irradiation on Clotting of Three-Month Old Liquid Plasma*

	Pool of 29 Plasma Samples		Pool of 31 Plasma Samples		Pool of 32 Plasma Samples		Pool of 29 Plasma Samples		Pool of 32 Plasma Samples		Pool of 26 Plasma Samples		Pool of 30 Plasma Samples		Pool of 32 Plasma Samples		
	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated	Unirradiated	Irradiated*	Unirradiated	Irradiated	Control Samples
Prothrombin time (sec)	19 6 20 0	21.2 21 8	22 0 21 6	20.8 20 2	18 0 18.6	22 4 21 9	18 2 17.8	21 0 20 2	18 4 18.2	20 0 19.8	20 0 19 4	19.8 20.8	19 0 18 6	21.2 21.8	18.8 19 4	20 4 20.2	12 0 12.9
Clotting time (sec) when 1 unit thrombin added to 1 cc plasma	53 4 54 0	70 0 71.0	67 0 66 0	93 0 100 0	60 0 61 0	100 0 105 0	65 0 68 0	105 0 110 0	59 0 62 0	80 0 83 0	67 0 70 0	78 0 80.0	63 0 67 0	102 0 110 0	82 0 90 0	110.0 120 0	21 0 22.2
Clotting time (sec) when 1 mg heparin added to 1 cc plasma with units thrombin added																	
1	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	
2	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	
10	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	25 0
20	No clot	No clot	No clot	No clot	No clot	No clot	10 0	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	No clot	
40	5 0	12.0	6 0	16 0	9 0	13 0		6 0	18 0	20 0	7 0	21 4	14 0	16 0	6 0	17 0	

* Irradiation with 2,537 A only

TABLE 3 —*Effect of Age on Clotting of Liquid Plasma*

	Control Sample (Fresh Unirradiated 1 Day Old Plasma)	Sample D (Single Sample Unirradiated 1 Day-Old Plasma)	Sample E (Pool of 8 Samples Unirradiated 2 Day Old Plasma)	Sample F (Single Sample Unirradiated 10 Mo Old Plasma)	Sample G (Single Sample Unirradiated 40-Mo -Old Plasma)	Sample H (Single Sample Unirradiated 50-Mo Old Plasma)	Sample I (Single Sample Irradiated 1 Day Old Plasma)	Sample J (Pool of 34 Samples Irradiated 7 Mo Old Plasma)	Sample K (Pool of 33 Samples Irradiated 10-Mo.-Old Plasma)	Sample L (Single Sample Irradiated 21 Mo Old Plasma)	Sample M (Single Sample Irradiated 28-Mo -Old Plasma)	Sample N (Single Sample Irradiated 34-Mo -Old Plasma)
Prothrombin time (sec)	13.8 13.8	15.2 15 4	14 0 14 4	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	17 0 17 0	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr
Clotting time (sec) when 1 unit thrombin added to 1 cc. plasma	21 0 21.5 (firm clot)	20 0 20 0 (firm clot)	20 0 20.8 (firm clot)	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	22 0 22 4 (firm clot)	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr	No clot in 24 hr
20 units 40 units 200 units added				No clot	No clot	No clot		No clot	No clot	No clot	No clot	No clot
Clotting time (sec) when 1 mg heparin and 10 units thrombin added to 1 cc plasma	12 2 13 0	23 0 23.2	23 0 23 6	No clot	No clot	No clot	21 0 21 0	No clot	No clot	No clot	No clot	No clot
Clotting time (sec) when 1 mg heparin and 20 units thrombin added to 1 cc plasma	4 0 4 8	8.4 9 0	8 0 8 4	No clot	No clot	No clot	8 8 9 2	No clot	No clot	No clot	No clot	No clot

three other samples, and with the addition of 0 5 cc of fibrinogen the last plasma clotted The amount of fibrinogen needed to produce clotting bore no direct relationship either to the age (these being all old plasmas) or to the exposure to irradiation This would suggest that changes other than those already noted occur in aging plasma

The fifth experiment was undertaken to explain the inhibition of clotting of 1 cc of venous blood by the addition of 0 3 cc of irradiated plasma Because Cutler and others noted this phenomenon, they postulated "complex changes" due to ultraviolet-ray irradiation The results of this experiment reveal that a similar quantity of unirradiated plasma also will prevent 1 cc of venous blood from clotting Amounts of 0 3 cc of each of seven fresh irradiated and six fresh unirradiated samples of plasma were added individually to 1 cc quantities of fresh whole blood obtained from 10 normal donors No clot was noted in any of the mixtures at the end of 24 hr Clot formation is also prevented when sodium citrate in serum or isotonic sodium chloride solution, in a concentration similar to that found in citrated plasma, is added to fresh whole blood Quantities of 0 3 cc of citrated isotonic sodium chloride solution and citrated irradiated serum were added to 1 cc of fresh whole blood, and again no clot was noted at the end of 24 hr Clot inhibition of fresh blood, therefore, as observed by Cutler and others, is due solely to the excess citrate and does not depend upon the substrate added

In the sixth experiment 600 cc of irradiated liquid plasma, aged 4, 7, 9, and 10 mo, was administered to each of five recipients Clotting times were determined 48 hr, 24 hr, and immediately prior to administration and at intervals of 1, 2, 24, 48, and 72 hr following the start of the infusion No prolongation of the clotting times could be demonstrated (Table 5)

TABLE 4—*Effect Produced by Addition of Fibrinogen to Aged Liquid Plasma*

	Sample F (Single Sample Unirradiated 10-Mo Old Plasma)	Sample G (Single Sample Unirradiated 40-Mo Old Plasma)	Sample H (Single Sample Unirradiated 50-Mo-Old Plasma)	Sample J (Pool of 34 Samples Irradiated 7 Mo Old Plasma)	Sample K (Pool of 33 Samples Irradiated 10-Mo Old Plasma)	Sample L (Single Sample Irradiated 21 Mo Old Plasma)	Sample M (Single Sample Irradiated 28-Mo Old Plasma)	Sample N (Single Sample Irradiated 34 Mo-Old Plasma)
20 units thrombin 1 cc. plasma and 0.3 cc irradiated serum	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 24 hr	No clot in 48 hr	No clot in 48 hr
20 units thrombin 1 cc plasma and 0.3 cc defibrinated *fresh serum*	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 48 hr	No clot in 24 hr	No clot in 48 hr	No clot in 48 hr
Clotting time (sec.) with 20 units thrombin 1 cc plasma 0.3 cc irradiated serum and 0.1 cc fibrinogen	No clot in 48 hr	60 0 61 0	No clot in 48 hr	17 0	8 0	16.2 15 4	No clot in 48 hr	No clot in 48 hr
Clotting time (sec) with 20 units thrombin 1 cc plasma 0.3 cc fresh defibrinated serum and 0.1 cc fibrinogen	No clot in 48 hr	60 0 58 0	No clot in 48 hr	20 0	10 0	17 4 18 6	No clot in 48 hr	No clot in 48 hr
Clotting time (sec) with 20 units thrombin 1 cc plasma and								
(a) 0 1 cc fibrinogen	No clot in 48 hr	58 0 60 4	No clot in 48 hr	8 0	5 0	15.2 16 0	No clot	No clot
(b) 0.3 cc fibrinogen	7		61				40	No clot
(c) 0.5 cc fibrinogen								40 0 45 0

TABLE 5—*In Vivo Effect of Injection of Irradiated Aged Liquid Plasma on Clotting Mechanism*

			Preinfusion Clotting Time						A †		B ‡		Postinfusion Clotting Time					
			48 Hr		24 Hr		Immediate		1 Hr		2 Hr		24 Hr		48 Hr		72 Hr	
Patient	Plasma No	Age	Min	Sec	Min	Sec	Min	Sec	Min	Sec	Min	Sec	Min	Sec	Min	Sec	Min	Sec
1	SP2165	9 mo	7	10	10	20	12		11		14	30	8	30	11	30	8	30
			9	20	9	15	13		12	30	15		10	30	12	0	10	30
2	SP2146	9 mo	8	40	10	10	12		12	15	11		11	15	Not taken		Not taken	
			11	5	12	15	12	15	14	30	14	30	11	40				
3	SP2772	4 mo	9	10	11	5	9	15	9	35	10		8	30	11	35	11	5
			9	5	11	15	9	30	11	5	11	30	9	5	12	60	13	30
4	SP2607	7 mo	12	30	14	15	Not taken		10	20	12	35	10	11	9	30	Not taken	
			13	22	14	25			11	40	15	20	11	20	9			
5	SP2078A	10 mo	11	10	11		11	30	10	45	12	20	10	45	8	20	11	30
			11	40	11	15	13		12		11	45	11	10	9		10	0

* Clotting time determined by Lee-White method
† Infusion started
‡ Infusion completed

COMMENT

Our reinvestigation of Cutler and others' work has revealed that the clotting of fresh irradiated plasma is practically the same as that of an aliquot unirradiated sample In older plasma, in which prothrombin and fibrinogen deterioration has begun but is not yet complete, the procedure of ultraviolet-ray irradiation does alter the clotting mechanism This alteration is of the magnitude of fractions of a minute and is produced by ultraviolet rays of both 1,849 A and 2,537 A Whether this effect is due to the actual irradiation or is ascribable to the mechanical trauma inherent in the procedure is as yet undetermined The inability of aged plasma to clot is due to fibrinogen deterioration and not to irradiation with ultraviolet rays of 1,849 A, for similar changes are noted in both irradiated and unirradiated plasmas Furthermore, these changes can be completely reversed *in* both by the addition of fibrinogen It has also been shown that the concentration of sodium citrate used in the routine collection of blood to prepare plasma is such that 0 3 cc of plasma will prevent the clotting of 1 cc of blood Identical inhibition of clotting can be produced by the use of citrated isotonic sodium chloride solution or citrated serum This phenomenon is apparently due entirely to the anticoagulant properties of sodium citrate The administration of 600 cc of aged irradiated liquid plasma did not affect the clotting mechanism of any of five recipients

How can one reconcile the established clinical efficacy of stored liquid plasma with the knowledge that such plasma is incoagulable by virtue of prothrombin and fibrinogen deterioration? The answer lies in the fact that the *normal* circulating prothrombin and fibrinogen are in such excess as to be able to compensate for their absence in the infused plasma Furthermore, significant hypoprothrombinemia is practically nonexistent, except in bishydroxycoumarin (dicumarol®) poisoning and the absence of bile from the intestinal tract Hypofibrinogenemia or afibrinogenemia is a rare congenital disturbance, which manifests itself early in life Too much stress has been placed on the presence of prothrombin and fibrinogen in plasma For all practical purposes, these substances are rarely needed when plasma is used In the occasional circumstance when fibrinogen or prothrombin is required, it is best to use fresh whole blood rather than plasma

CONCLUSIONS

The ultraviolet-ray irradiation of fresh plasma does not alter its clotting mechanism In plasma in which prothrombin and fibrinogen deterioration has begun, changes in the clotting mechanism are produced by ultraviolet-ray irradiation, utilizing either 1,849 A or 2,537 A These changes are of the magnitude of fractions of a minute The inability of aged liquid plasma to clot upon the addition of thrombin is due to the disappearance of fibrinogen, this process can be reversed by the addition of fibrinogen This is equally true of both irradiated and unirradiated liquid plasma The inhibition of in vitro clotting of fresh blood by the addition of plasma is due to the sodium citrate in the plasma The administration of aged irradiated liquid plasma in 600 cc quantities has no effect on the clotting mechanism of recipients

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ALTERATIONS IN THE PERMEABILITY OF MEMBRANES DURING INFECTIONS

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and

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The underlying physiological disturbances responsible for death during the course of acute infections remain a mystery Thousands of years ago men began to record descriptions of febrile illnesses A particular type of rash might be accompanied by a slow or fast pulse and by a steady or remitting type of fever, which would run its course within a reasonably constant period of time and would be followed by a period of convalescence On the basis of clinical observations, various specific diseases were separated from one another—the small from the great pox, the typhuslike, or typhoid, fever from typhus In the course of some acute infections the appearance of edema was noted, in others edema was not visible, but diuresis occurred during recovery—an observation which suggested that fluid was retained in the tissues, whether it was obvious or not With the introduction of immunologic techniques, it was recognized that the patient would react to the infecting agent with demonstrable immune responses, which could be used for confirmation of the diagnosis or for prognosis

In addition to the observations on acute generalized diseases, excellent clinical descriptions of different types of local infections in wounds or the skin were recorded Lesions characterized by a thin serous exudate, or by uniform red swelling having a sharp and rapidly spreading raised edge in the skin (erysipelas), were contrasted with those having a thick purulent exudate or with more localized swelling which remained circumscribed (a boil or carbuncle) It was recognized that the redness and heat of the inflammation were the result of a local increase in blood flow The swelling was attributed to a loss of fluid from the blood into the tissues The pain was ascribed to stimulation of nerve endings—the result of an increase in the tension of tissues, produced by the accumulation of fluid If the local infection were adjacent to a serous cavity, fluid might accumulate in that space, in tuberculosis, for instance, a pleural effusion might develop early Because of its higher protein content, the exudate produced by infection was recognized to clot more readily than fluid accumulating as the result of mechanical factors, such as heart failure or venous and lymphatic obstruction

On the supposition that the body's reaction to generalized infectious diseases might follow the same general principles involved in its response to localized infections, we began to make observations in various specific fevers Any alteration in the permeability of membranes occurring during the course of an infection should affect the

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This article has been abbreviated for publication in THE JOURNAL by omission of Figures 3 4 5 10 12 13 14 and 17 These will appear in the authors reprints

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fluids in the entire vascular tree, as well as their local distribution in the affected tissues Changes in the general circulation would explain the clinical observations that a weak pulse, faint heart sounds, and cyanosis frequently precede death during infectious diseases[1] Direct toxic myocardial damage (central circulatory failure) might then be differentiated at the bedside from peripheral collapse (peripheral circulatory failure) resulting from toxemic alterations in the permeability of membranes

ALTERATIONS IN PERMEABILITY ASSOCIATED WITH SPECIFIC DISEASES

Alterations Occurring Within Minutes to Hours—Meningococcemia In meningococcemia the integrity of membranes may be altered within a matter of minutes or hours The characteristic hemorrhagic rash is due to the rupture of capillaries by groups of organisms A loss of capillary tone may lead rapidly to a picture of peripheral circulatory collapse, without appreciable alteration in the permeability of membranes or without visible edema Such a sequence of events occurred in the case of a girl 17, who was admitted to the hospital with a typical rash (Fig 1) and with circulatory failure The simple administration of isotonic sodium chloride solution to correct dehydration and increase the circulating blood volume was all that was required to support the circulation (Fig 2) The acute symptoms of infection were controlled with chemotherapy

In these mild cases of meningococcemia, slight edema may be evident after several days, in this patient subcutaneous pitting edema developed, and the plasma proteins were found to be low Plasma was then administered to correct the hypoproteinemia This therapeutic measure apparently increased the circulating blood volume to such an extent (once the alteration in the permeability of membranes was corrected) that an esophageal varix (the result of a pre-existing Banti's syndrome) ruptured, and hemorrhagic shock occurred Whole blood was given to replenish that lost from the circulation This time the increase in blood volume produced central circulatory failure, which led to a fatal pulmonary infarction

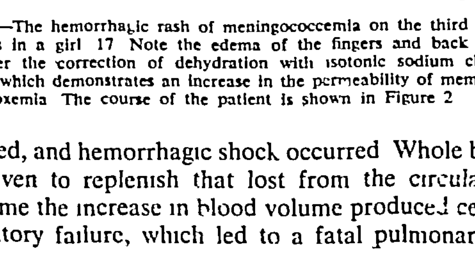

Fig 1—The hemorrhagic rash of meningococcemia on the third day of symptoms in a girl 17 Note the edema of the fingers and back of the hand after the correction of dehydration with isotonic sodium chloride solution which demonstrates an increase in the permeability of membranes due to toxemia The course of the patient is shown in Figure 2

In the hyperacute form of the disease, circulatory failure develops too rapidly for edema to become visible Such was the case with an elderly shoemaker who entered the hospital with peripheral circulatory failure so severe that it had produced collapse of the neck and arm veins, as well as a fall in the arterial blood pressure Because of the severity of the vascular collapse and the presence of deep cyanosis and coma, bilateral adrenal hemorrhage was suspected Isotonic sodium chloride solution was given to correct the dehydration, but no clinical improvement resulted Large amounts of plasma were then administered intravenously, but the blood pressure did not rise (Fig 3) Since the failure of these initial therapeutic measures tended to confirm the clinical impression of adrenal failure, an aqueous solution containing 500 units of adrenal cortical hormone (50 dog units per cubic centimeter) was given intravenously A dramatic change in the patient's clinical condition occurred after the administration of the first 150 units The blood pressure rose, the veins filled, and the patient roused from his coma No edema appeared, but some hours later a gallop rhythm was noted and the neck veins rapidly became distended Acute myocardial failure developed, and the patient died[2]

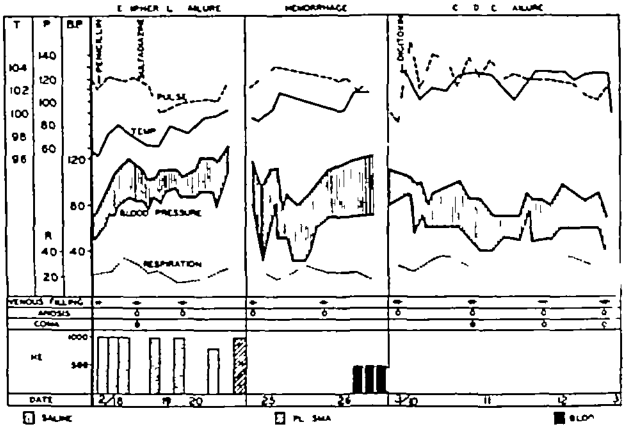

Fig 2—Three different types of circulatory failure occurring successively in a girl 17 with meningococcemia with meningitis circulatory failure and pre-existing Banti s syndrome Note the correction of the peripheral circulatory failure by therapy with isotonic sodium chloride solution alone and the prompt response to chemotherapy The skin rash and edema visible in this patient on the second hospital day are shown in Figure 1 No appreciable change in the permeability of membranes occurred with the hemorrhage Pulmonary and peripheral edema occupied the central myocardial failure An adrenal gland removed at necropsy is shown in Figure 4

The vascular changes occurring early in the course of meningococcemia are due to toxemia from products of the infecting organism and to dehydration The differentiation between simple toxemic peripheral circulatory collapse and that due to adrenal destruction (Waterhouse-Friderichsen syndrome) can be made clinically at the bedside and confirmed at necropsy The adrenals in the girl showed no evidence of hemorrhage, in the man both adrenals were completely destroyed by [illegible] hemorrhage (Fig 4) It is evident that the clinical differentiation between peripheral vascular collapse due to infection alone and that due to adrenal cortical destruction was correctly made in both cases In the latter case the distribution of fluids was not appreciably altered by the adrenal cortical deficiency The severe peripheral collapse caused the blood pressure to fall below the level necessary for adequate glomerular filtration The defect in the reabsorption of sodium by the renal tubules, which leads to the excessive loss of water and salt as well as to retention of potassium, did not have time to develop, as it does in the chronic deficiency of the cortical hormone which we recognize as Addison's disease

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[1] Harrell G T Disturbances of the Circulation in Acute Infections North Carolina M J 8 549 563 (Sept) 1947

[2] Harrell G T Case Report Clinico-Pathological Conference North Carolina M J 7 562 565 (Oct) 1945

Alterations Occurring Within Hours or Days—Pneumococcus Lobar Pneumonia In pneumococcus lobar pneumonia alterations in the permeability of membranes occur over a period of hours or days Many years ago it was discovered that chlorides were lost from the circulating blood stream but retained in tissues during the acute phase of the disease [3] Later observations demonstrated that the extravascular space (measured by the dilution of injected thiocyanate ions) and the circulating blood volume (measured by the Evans blue technique) were increased [4] Apparently the chloride and its companion ions take water with them as they leave the vascular tree The defect in permeability is apparently not great enough to decrease the blood volume

These observations offer a logical explanation of the mechanism responsible for the tendency of the right side of the heart to fail during pneumonia, particularly after the excessive administration of intravenous fluids The usual increase in blood volume is exaggerated by the additional fluids, and the myocardium is overloaded The favorable response to digitalis which has been noted by older clinicians is probably due to correction of the central (myocardial) circulatory failure A direct peripheral action on the permeability of blood vessels which apparently mobilizes tissue fluids may also play a part [5]

The additional factor of anoxia, which has long been recognized as a contributing cause for alterations in the permeability of membranes, can be illustrated more clearly in pneumococcal pneumonia than in some other infections The presence of the pulmonary lesion decreases the size of the vascular bed available for oxygenation of the blood, and cyanosis develops

Alterations Occurring Within Days or Weeks—Trichinosis In trichinosis the alteration in the permeability of membranes is pronounced and develops more gradually—over a period of days or weeks The earliest diagnostic sign, splinter hemorrhages in the nail beds, is due to traumatic rupture of capillary loops, with extravasation of blood, as larvae migrate from the circulation into muscles (Fig 5) [6] The accumulation of edema fluid, especially around the eyes, has been recognized as one of the most frequent early clinical manifestations of the disease In severe trichinosis the accumulation of fluid during the stage of edema is associated with oliguria, which lasts from one to two weeks and is followed by diuresis Serial determinations of the blood proteins made in clinically severe cases of the disease have revealed hypoproteinemia [7] The reversible psychic disturbances occasionally seen during the stage of edema suggest an excessive hydration of nerve cells

By the time edema is recognizable, evidence of immunity can be detected in the blood by a positive precipitin reaction or in the cells by a positive skin test This sequence of events suggests the possibility that immunologic mechanisms may play some part in the physiological disturbances associated with the disease This thesis has been tested by the experimental production of the disease in rabbits [8] The physiological changes associated with alterations in the permeability of membranes were maximal just before humoral antibodies (precipitins) appeared (Fig 6)

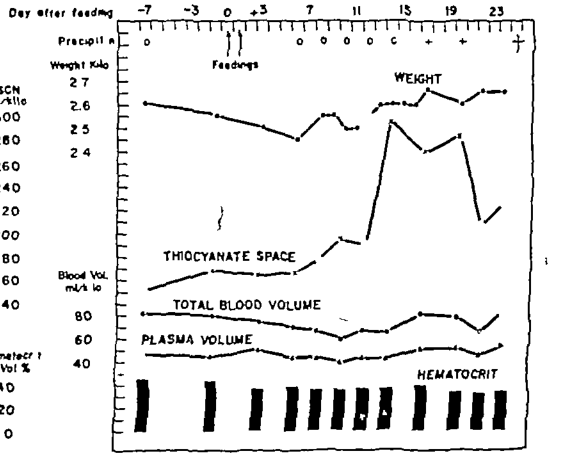

Fig 6—*Fluid* changes in a rabbit fed 6 gm of trichinous rat meat Note the increase in the thiocyanate space on the 14th day after the first feeding without a relative increase in body weight The blood volume was *decreased slightly* during the 10th to 14th days The physiological changes were beginning to reverse when the precipitin test became positive in the serum on the 17th day This rabbit was severely ill but died as the result of hematopericardium on the 25th day

Rickettsial Spotted Fever During the acute phase of Rocky Mountain spotted fever, the anatomic lesion is clearly reflected in the visible rash The histological picture is essentially one of arteritis, with necrosis and thrombosis of the walls of arterioles beginning at the capillary junction The physiological disturbance, however, may be out of all proportion to the number of pathological lesions The permeability of the membranes gradually increases during the first two weeks of the disease, and evidences of this increase are detectable generally throughout the body, often at some distance from the arteriolar lesions [9]

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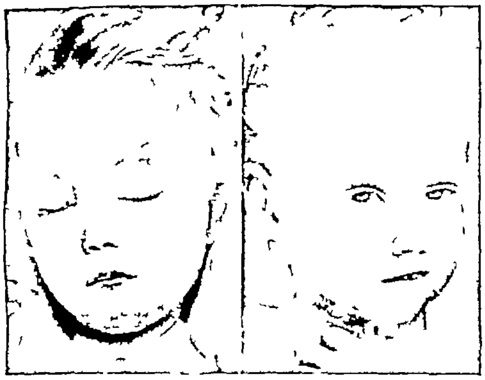

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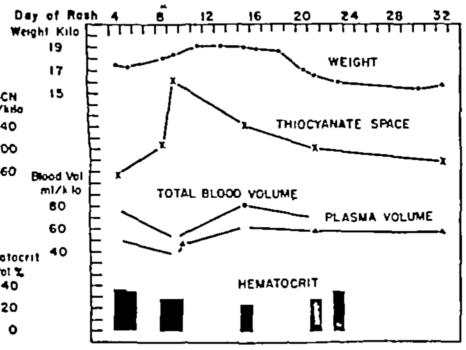
Studies on the mechanism responsible for the circulatory changes have shown that the thiocyanate space is increased and the blood volume decreased during this critical period (Fig 8) [11] When the intravascular osmotic pressure is maintained with plasma or blood, fluid is retained in the circulation, the blood pressure is increased, and the kidneys' powers of filtration are improved Edema is decreased, and the effects of the physiological disturbances resulting from changes in permeability are lessened If fluids are properly selected, large amounts may safely be given parenterally We have, for instance, previously reported the case of a small child whose entire circulating blood volume was twice completely replaced, first with an equivalent amount of proteins and then with an even larger amount of crystalloids [12]



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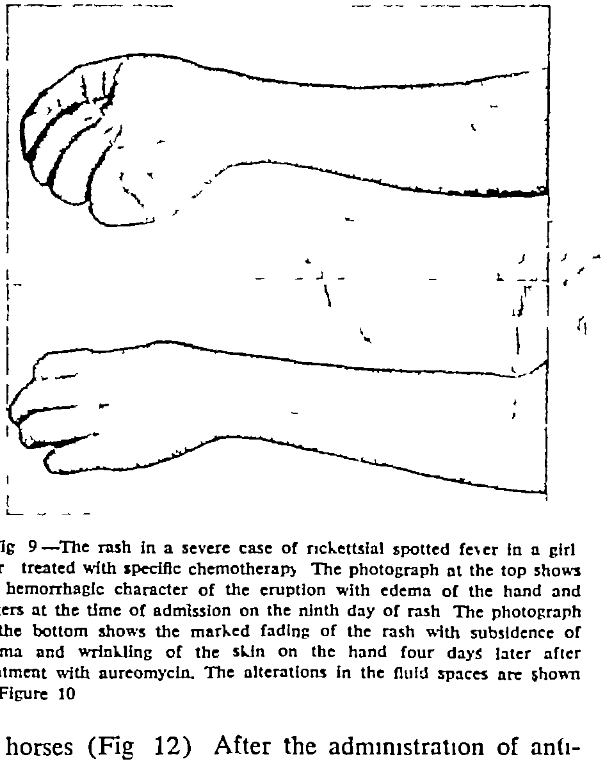
The early administration of effective chemotherapeutic agents which directly attack the rickettsiae will rapidly change the character of the rash (Fig 9) and prevent the development of further edema (Fig 10) [13]

Alterations Occurring in Immune Reactions—Serum Sickness When humoral antibodies produced by an immunized animal are used to assist the patient in overcoming his infection, another illness, serum sickness, often results In many of its clinical aspects, such as fever, malaise, and skin eruption, serum sickness resembles an infectious disease Indeed, edema, wheals in the skin, and swelling of the joints have long been recognized as prominent features of this illness, all these suggest that immune reactions can produce alterations in the permeability of membranes In serum sickness resulting from the administration of Rocky Mountain spotted fever antiserum prepared in rabbits, measurements of the extravascular space (by the thiocyanate technique) show the same alterations which are seen in the original infection (Fig 11) Similar changes have been observed in patients who have received diphtheria antitoxin prepared in horses (Fig 12) After the administration of antireticular cytotoxic serum (ACS) prepared in rabbits, alterations in permeability have been demonstrated in the absence of any infection An increase in the thiocyanate space and a decrease in the blood volume have been found to occur in serum sickness experimentally



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necessary for adequate glomerular filtration The defect in the reabsorption of sodium by the renal tubules, which leads to the excessive loss of water and salt as well as to retention of potassium, did not have time to develop, as it does in the chronic deficiency of the cortical hormone which we recognize as Addison's disease

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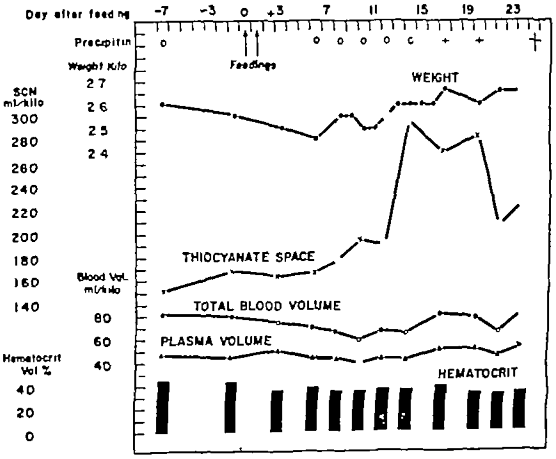
Alterations Occurring Within Hours or Days—Pneumococcus Lobar Pneumonia In pneumococcus lobar pneumonia alterations in the permeability of membranes occur over a period of hours or days Many years ago it was discovered that chlorides were lost from the circulating blood stream but retained in tissues during the acute phase of the disease[3] Later observations demonstrated that the extravascular space (measured by the dilution of injected thiocyanate ions) and the circulating blood volume (measured by the Evans blue technique) were increased[4] Apparently the chloride and its companion ions take water with them as they leave the vascular tree The defect in permeability is apparently not great enough to decrease the blood volume

These observations offer a logical explanation of the mechanism responsible for the tendency of the right side of the heart to fail during pneumonia, particularly after the excessive administration of intravenous fluids The usual increase in blood volume is exaggerated by the additional fluids, and the myocardium is overloaded The favorable response to digitalis which has been noted by older clinicians is probably due to correction of the central (myocardial) circulatory failure A direct peripheral action on the permeability of blood vessels which apparently mobilizes tissue fluids may also play a part[5]

The additional factor of anoxia, which has long been recognized as a contributing cause for alterations in the permeability of membranes, can be illustrated more clearly in pneumococcal pneumonia than in some other infections The presence of the pulmonary lesion decreases the size of the vascular bed available for oxygenation of the blood, and cyanosis develops

Alterations Occurring Within Days or Weeks—Trichinosis In trichinosis the alteration in the permeability of membranes is pronounced and develops more gradually—over a period of days or weeks The earliest diagnostic sign, splinter hemorrhages in the nail beds, is due to traumatic rupture of capillary loops, with extravasation of blood, as larvae migrate from the circulation into muscles (Fig 5)[6] The accumulation of edema fluid, especially around the eyes, has been recognized as one of the most frequent early clinical manifestations of the disease In severe trichinosis the accumulation of fluid during the stage of edema is associated with oliguria, which lasts from one to two weeks and is followed by diuresis Serial determinations of the blood proteins made in clinically severe cases of the disease have revealed hypoproteinemia[7] The reversible psychic disturbances occasionally seen during the stage of edema suggest an excessive hydration of nerve cells

By the time edema is recognizable, evidence of immunity can be detected in the blood by a positive precipitin reaction or in the cells by a positive skin test This sequence of events suggests the possibility that immunologic mechanisms may play some part in the physiological disturbances associated with the disease This thesis has been tested by the experimental production of the disease in rabbits[8] The physiological changes associated with alterations in the permeability of membranes were maximal just before humoral antibodies (precipitins) appeared (Fig 6)



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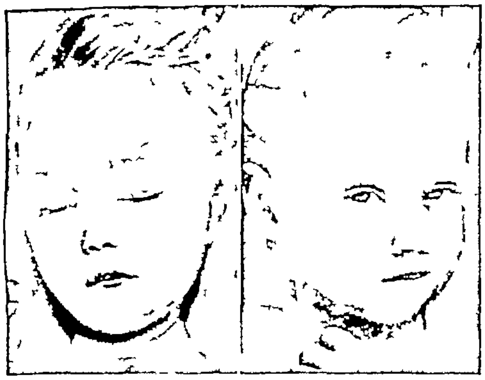

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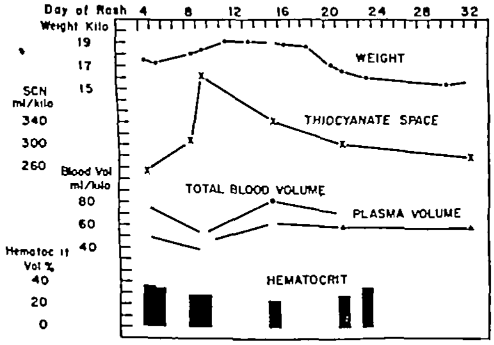

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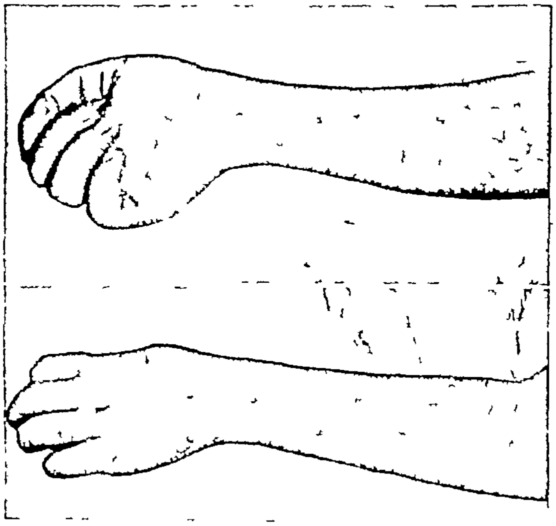

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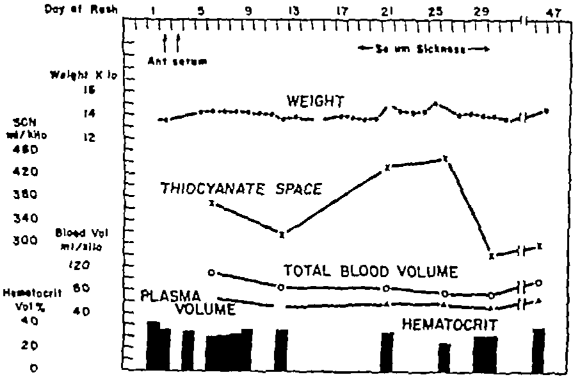

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Prolonged serum sickness developed in one of our patients who received penicillin suspended in oil Since the patient was known to have had repeated episodes of stomatitis following the ingestion of peanuts, the sensitivity was thought to be due to the peanut oil used as a menstruum and not to the penicillin Apparently the injection of any material which is allergenic to a particular patient may produce alterations in the permeability of membranes (Fig 14)

COMMENT

Alterations in Capillary Permeability —The observations reported can be interpreted as indicating an increase in the permeability of the vascular tree, permitting the progressive loss of crystalloids, colloids, and red blood cells from the circulation as the magnitude of the capillary defect increased with the clinical severity of the disease The alterations in the vascular tree can be visualized as a series of pores or openings in the capillary wall where the normal extravascular circulation of crystalloids and, to a lesser extent, of small protein molecules is known to occur In mild cases, water and ions which normally traverse the membranes would leave the blood more readily Larger molecules, such as albumin and other proteins, would be lost in severer instances, while red blood cells would pass out of the vascular tree only in the extremest reactions

Alterations in Permeability of Cellular Membranes —The permeability of cell membranes is probably altered too, though no techniques are available for direct measurement of cellular changes Viruses and rickettsiae are obligate intracellular parasites Many bacterial infections—particularly those with a chronic or prolonged course, such as tuberculosis and brucellosis —pass through a phase in which the organisms are found intracellularly During this stage the diffusion of toxemic products of the organism must be through the cell wall, with the attendant danger of damage Furthermore, any immune reaction would take place within the cell, so that substances released in the process would affect primarily the parasitized cells Additional light on the problem of cellular permeability may be shed by experiments now in progress,[15] utilizing the radioactive isotopic dilution technique with Na^{24} and K^{42}

In children acute infections accompanied by diarrhea are reported to produce a potassium deficiency How much of this deficiency is due to a change in the permeability of cellular membranes as a result of the infection itself and how much is due to the disturbances in fluid balance associated with the diarrhea is unknown In either event potassium moves out of the cell in which the membrane of the cell wall normally retains it and is lost in the urine or feces

An analogous situation in which the permeability of cellular membranes is altered in the absence of infection is illustrated by the edema occurring in a young woman with drug intoxication which followed the therapeutic administration of an arsenical preparation (Fig 15) Arsenic apparently poisons intracellular enzyme systems which contain sulfhydryl (SH) groups in the molecule The administration of British anti-lewisite (BAL), a substance which has large numbers of accessible sulfhydryl groups, will rapidly correct the enzymatic defect by combining with the metal With correction of the defect, the alteration in the permeability of membranes is reversed and edema disappears (Fig 16) Observations of this type may give further clues to the mechanism responsible for production of cell defects Such

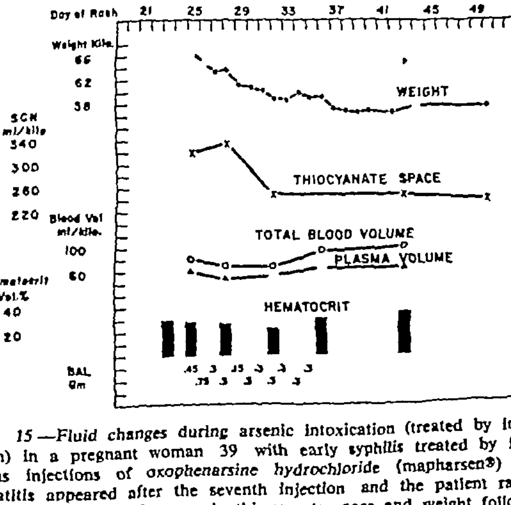

Fig 15—Fluid changes during arsenic intoxication (treated by inactivation) in a pregnant woman 39 with early syphilis treated by intravenous injections of *oxophenarsine hydrochloride* (mapharsen®) The dermatitis appeared after the seventh injection and the patient rapidly became ill Note the decrease in *thiocyanate space* and weight following the administration of BAL. Clinical photographs of the patient are shown in *Figure 16*

questions are of more than academic interest, and are important in the design of therapy for acute infections Intracellular enzyme systems are greatly affected by the hydration of cells and by the intracellular concentrations of ions from salts

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[14] Aikawa J K and Harrell G T The Immunophysiology of Serum Sickness Alterations in the Blood Volume and Thiocyanate Space in Relation to the Development of Humoral Antibodies in the Rabbit, J Clin Invest 30:360-368 (April) 1951

[15] Aikawa J K The Significance of the Radiosodium Space in Human Disease A Comparison with the Thiocyanate Space South M J [illegible] 654-[illegible] (July) 1951

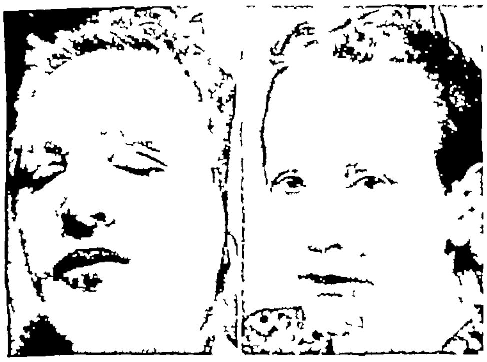

Fig. 16—Edema and exfoliative dermatitis due to arsenic intoxication in a pregnant woman 39 The photograph on the left was taken on the 27th day of rash two days after the institution of therapy with British anti-lewisite. Note the generalized character of the edema and the scaling of dead skin. The photograph on the right was taken three months later showing complete subsidence of signs The patient presented essentially the same appearance two weeks after the institution of therapy illustrating how rapidly changes in permeability may revert with repair of the cellular defect

Therapeutic Possibilities —When infections produce an alteration in the permeability of membranes, treatment with maximum therapeutic doses of effective chemotherapeutic agents should be begun promptly in order to reduce the number of organisms and to prevent further damage In diseases which frequently produce severe alterations in permeability—the rickettsial diseases, for example—every attempt should be made to prevent, in so far as possible, the development of the full-blown clinical picture seen in the natural course of the disease

Salt, dextrose, and water must be administered with care The drop in circulating proteins may be prevented or limited by the administration of a high-protein diet from the beginning of therapy [16] When the patient is seen late in the course of the disease, after the proteins in the blood and tissues have been depleted, or after acute circulatory collapse has developed, preformed proteins in the form of concentrated human serum albumin, plasma, or whole blood must be administered Fluid replacement therapy in specific diseases and under specific circumstances is discussed further in the illustrative cases presented in the section entitled "Alterations in Permeability Associated with Specific Diseases "

The fact that, in patients with serum sickness, administration of antihistaminic drugs relieves the joint pain and swelling and causes the wheals to disappear suggests that these drugs may find a useful place in the treatment of acute infections which have a large element of hypersensitivity Salicylates and the closely related chemical compounds para-aminobenzoic acid (PABA) and procaine have long been successfully employed in the treatment of disease associated with immune reactions

Metabolic factors which affect the permeability of membranes during the course of infections are as yet poorly understood It is not known whether the increase in metabolic rate observed during infections is an attempt by the body to compensate for the defect in permeability by increasing thyroid function It is well recognized, however, that when the thyroid function is lowered, as in myxedema, the membranes become more permeable and fluid is retained in the tissues [15] The salicylates apparently help to correct the defect in permeability in serum sickness, they may, through their antipyretic effect, also depress the increased level of metabolic activity

Many ingenious theories have been proposed concerning the role of the adrenal in acute infections or in diseases which are indirectly related to the stress of illness [17] In instances of adrenal destruction (Waterhouse-Friderichsen syndrome) occurring during meningococcemia, the indications for hormone-replacement therapy are clear The decision to use adrenal cortical hormones must be made on clinical grounds The necessary observations on the pulse, respirations, blood pressure, venous filling and the degree of cyanosis and edema can be made at the bedside with the equipment usually carried in a physician's bag

Corticotrophic hormone (ACTH) or cortisone often will dramatically relieve the symptoms of serum sickness and quickly restore the physiological integrity of the membranes (Fig 14) In patients with pneumonia a reduction in the degree of toxemia and an increase in the sense of well-being following the administration of these hormones have been reported [18] The possible usefulness of these hormones in the treatment of diseases which characteristically are associated with high degrees of allergy, such as tuberculosis, is still under investigation It should be emphasized that the infecting agent is not attacked by the hormones and that they have no effect on bacteremia, if this is present, their action is solely on the tissues of the host The suppression of toxemic reactions in the host may actually be accompanied by an increase in the number of organisms and an exacerbation of the disease [19] This sequence of events has long been recognized by clinicians in the recrudescence of clinical tuberculosis following the termination of pregnancy

The sudden release of large amounts of antigen by the rapid destruction of organisms (such as the Herxheimer reaction which occurs in syphilis after the initial injection of penicillin) or by the dissolution of a granuloma (as occurs in some fungus infections after the administration of iodides) may not prove so detrimental to the patient if the harmful effects of the antigens on sensitized cells can be ameliorated by hormone therapy Conversely, the apparent stimulating effect which hormone therapy has on the growth of the etiological agent may possibly be produced in rabbits by the injection of fractions of human plasma[14]

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[16] Harrell G T Wolff W A Venning W L and Reinhart J B The Prevention and Control of Disturbances of Protein Metabolism in Rocky Mountain Spotted Fever The Value of Forced Feedings of a High Protein Diet and of the Administration of Specific Antiserum South. M J 39 551 558 (July) 1946.

[17] Selye Hans The Physiology and Pathology of Exposure to Stre Montreal Acta Inc 1950

[18] Kass E. H Ingbar S H., and Finland M Effects of Adreno corticotropic Hormone in Pneumonia Clinical Bacteriological and Serological Studies Ann. Int Med 33 1081 1098 (Nov) 1950

[19] Lurie M B Zappasodi P Dannenberg A B Jr and Swartz I B Constitutional Factors in Resistance to Infection The Effect of Cortisone on the Pathogenesis of Tuberculosis Science 113: 234 237 (March 2) 1951 ACTH and Cortisone in Active Infections editorial Arch Int Med 87 1 3 (Jan) 1951 Cortisone in Tuberculosis, editorial J A M A 145 907 (March 24) 1951

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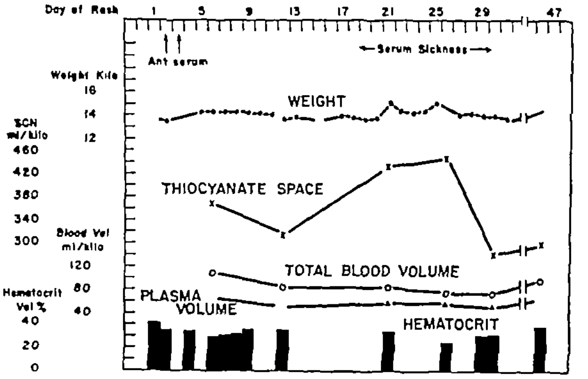

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Alterations in Permeability of Cellular Membranes —The permeability of cell membranes is probably altered too, though no techniques are available for direct measurement of cellular changes Viruses and rickettsiae are obligate intracellular parasites Many bacterial infections—particularly those with a chronic or prolonged course, such as tuberculosis and brucellosis —pass through a phase in which the organisms are found intracellularly During this stage the diffusion of toxemic products of the organism must be through the cell wall, with the attendant danger of damage Furthermore, any immune reaction would take place within the cell, so that substances released in the process would affect primarily the parasitized cells Additional light on the problem of cellular permeability may be shed by experiments now in progress,[15] utilizing the radioactive isotopic dilution technique with Na^{24} and K^{42}

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An analogous situation in which the permeability of cellular membranes is altered in the absence of infection is illustrated by the edema occurring in a young woman with drug intoxication which followed the therapeutic administration of an arsenical preparation (Fig 15) Arsenic apparently poisons intracellular enzyme systems which contain sulfhydryl (SH) groups in the molecule The administration of British anti-lewisite (BAL), a substance which has large numbers of accessible sulfhydryl groups, will rapidly correct the enzymatic defect by combining with the metal With correction of the defect, the alteration in the permeability of membranes is reversed and edema disappears (Fig 16) Observations of this type may give further clues to the mechanism responsible for production of cell defects Such

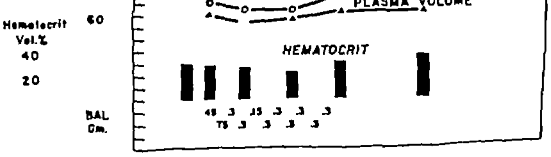

Fig 15 —Fluid changes during arsenic intoxication (treated by inactivation) in a pregnant woman, 39 with early syphilis treated by intravenous injections of oxophenarsine hydrochloride (mapharsen®) The dermatitis appeared after the seventh injection and the patient rapidly became ill Note the decrease in thiocyanate space and weight following the administration of BAL. Clinical photographs of the patient are shown in Figure 16

questions are of more than academic interest, and are important in the design of therapy for acute infections Intracellular enzyme systems are greatly affected by the hydration of cells and by the intracellular concentrations of ions from salts

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[14] Aikawa J K and Harrell G T The Immunophysiology of Serum Sickness Alterations in the Blood Volume and Thiocyanate Space in Relation to the Development of Humoral Antibodies in the Rabbit, J Clin Invest 30 360-368 (April) 1951

[15] Aikawa J K The Significance of the Radiosodium Space in Human Disease A Comparison with the Thiocyanate Space South M J [illegible] 654-661 (July) 1951

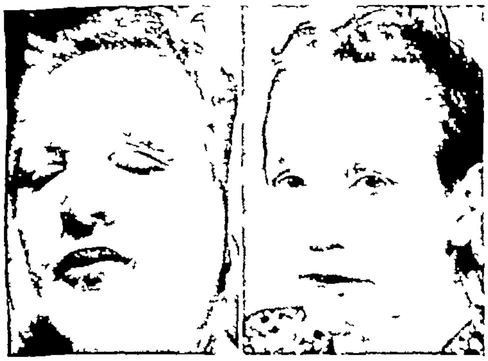

Fig. 16 —Edema and exfoliative dermatitis due to arsenic intoxication in a pregnant woman 39 The photograph on the left was taken on the 27th day of rash two days after the institution of therapy with British anti-lewisite Note the generalized character of the edema and the scaling of dead skin. The photograph on the right was taken three months later showing complete subsidence of signs The patient presented essentially the same appearance two weeks after the institution of therapy illustrating how rapidly changes in permeability may revert with repair of the cellular defect

Therapeutic Possibilities — When infections produce an alteration in the permeability of membranes, treatment with maximum therapeutic doses of effective chemotherapeutic agents should be begun promptly in order to reduce the number of organisms and to prevent further damage In diseases which frequently produce severe alterations in permeability—the rickettsial diseases, for example—every attempt should be made to prevent, in so far as possible, the development of the full-blown clinical picture seen in the natural course of the disease

Salt, dextrose, and water must be administered with care The drop in circulating proteins may be prevented or limited by the administration of a high-protein diet from the beginning of therapy [16] When the patient is seen late in the course of the disease, after the proteins in the blood and tissues have been depleted, or after acute circulatory collapse has developed, preformed proteins in the form of concentrated human serum albumin, plasma, or whole blood must be administered Fluid replacement therapy in specific diseases and under specific circumstances is discussed further in the illustrative cases presented in the section entitled "Alterations in Permeability Associated with Specific Diseases "

The fact that, in patients with serum sickness, administration of antihistaminic drugs relieves the joint pain and swelling and causes the wheals to disappear suggests that these drugs may find a useful place in the treatment of acute infections which have a large element of hypersensitivity Salicylates and the closely related chemical compounds para-aminobenzoic acid (PABA) and procaine have long been successfully employed in the treatment of disease associated with immune reactions

Metabolic factors which affect the permeability of membranes during the course of infections are as yet poorly understood It is not known whether the increase in metabolic rate observed during infections is an attempt by the body to compensate for the defect in permeability by increasing thyroid function It is well recognized, however, that when the thyroid function is lowered, as in myxedema, the membranes become more permeable and fluid is retained in the tissues [15] The salicylates apparently help to correct the defect in permeability in serum sickness, they may, through their antipyretic effect, also depress the increased level of metabolic activity

Many ingenious theories have been proposed concerning the role of the adrenal in acute infections or in diseases which are indirectly related to the stress of illness [17] In instances of adrenal destruction (Waterhouse-Friderichsen syndrome) occurring during meningococcemia, the indications for hormone-replacement therapy are clear The decision to use adrenal cortical hormones must be made on clinical grounds The necessary observations on the pulse, respirations, blood pressure, venous filling and the degree of cyanosis and edema can be made at the bedside with the equipment usually carried in a physician's bag

Corticotrophic hormone (ACTH) or cortisone often will dramatically relieve the symptoms of serum sickness and quickly restore the physiological integrity of the membranes (Fig 14) In patients with pneumonia a reduction in the degree of toxemia and an increase in the sense of well-being following the administration of these hormones have been reported [18] The possible usefulness of these hormones in the treatment of diseases which characteristically are associated with high degrees of allergy, such as tuberculosis, is still under investigation It should be emphasized that the infecting agent is not attacked by the hormones and that they have no effect on bacteremia, if this is present, their action is solely on the tissues of the host The suppression of toxemic reactions in the host may actually be accompanied by an increase in the number of organisms and an exacerbation of the disease [19] This sequence of events has long been recognized by clinicians in the recrudescence of clinical tuberculosis following the termination of pregnancy

The sudden release of large amounts of antigen by the rapid destruction of organisms (such as the Herxheimer reaction which occurs in syphilis after the initial injection of penicillin) or by the dissolution of a granuloma (as occurs in some fungus infections after the administration of iodides) may not prove so detrimental to the patient if the harmful effects of the antigens on sensitized cells can be ameliorated by hormone therapy Conversely, the apparent stimulating effect which hormone therapy has on the growth of the etiological agent may possibly be counteracted by the simultaneous or prior administration of specific chemotherapeutic agents

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[16] Harrell G T Wolff W A Venning W L and Reinhart J B The Prevention and Control of Disturbances of Protein Metabolism in Rocky Mountain Spotted Fever The Value of Forced Feedings of a High Protein Diet and of the Administration of Specific Antiserum South. M J 39 551 558 (July) 1946

[17] Selye Hans The Physiology and Pathology of Exposure to Stress Montreal Acta Inc 1950

[18] Kass E. H Ingbar S H and Finland M Effects of Adrenocorticotropic Hormone in Pneumonia Clinical Bacteriological and Serological Studies Ann Int. Med 33: 1081 1098 (Nov) 1950

[19] Lurie M B Zappasodi P Dannenberg A B Jr and Swartz I B Constitutional Factors in Resistance to Infection The Effect of Cortisone on the Pathogenesis of Tuberculosis Science 113: 234 237 (March 2) 1951 ACTH and Cortisone in Active Infections editorial Arch Int Med 87 1 3 (Jan) 1951 Cortisone in Tuberculosis editorial J A M A 145 907 (March 24) 1951

In the final analysis, however, the patient must still heal himself In spite of the most vigorous and carefully planned therapy, failures will occur Patients will die of the toxemia of overwhelming infections and as the result of extensive vascular or cellular damage However, intelligent management, with attention to alterations in the permeability of membranes, will allow the salvage of many cases now considered hopeless, will lessen the severity of the patient's reaction to his infection, and will shorten convalescence

CONCLUSIONS

Our observations indicate that the permeability of membranes is altered during the course of acute infections Early in the course of the disease the defect is probably induced by the toxemic products of the infecting organisms Later in the course of the illness the defect may result from an immune reaction In rickettsial diseases, for instance, the greatest alteration in permeability appears to come at the time when immunity is rising most rapidly, the balance between the antigens liberated from or secreted by the organisms and the antibody produced by the host is being rapidly destroyed [11] The point at which immunity overcomes the infection and the antibodies begin to appear in excess often is accompanied by a dramatic clinical change which is recognized as a crisis

Antigen-antibody reactions are known to liberate a histamine-like substance That histamine alters the permeability of membranes locally can be readily demonstrated by the intracutaneous injection of a small amount of the material, within a few minutes a wheal appears at the site of injection (Fig 17) Petechial hemorrhages have been recognized for years as a manifestation of anaphylactic reactions, a further clue to the mechanism of production of lesions in infections

Since certain fundamental principles are common to all infectious diseases, alterations in the permeability of membranes can be detected in many infections occurring naturally in human beings or produced experimentally in animals The observations reported indicate that the reactions are qualitatively similar, whether produced by a bacterial infection (meningococcemia), and extracellular infection due to a nematode (trichinosis), an intracellular infection caused by rickettsiae (Rocky Mountain spotted fever), or even an immune reaction occurring in the absence of actual infection (serum sickness)

SUMMARY

The permeability of membranes is altered during the course of acute infections Edema develops during the acute phase, associated with an increase in extravascular fluid (thiocyanate space), and disappears with recovery The alterations may occur within minutes to hours (meningococcemia), within hours to days (pneumococcus pneumonia), or within days to weeks (trichinosis and rickettsial spotted fever) The alterations in permeability which occur during immune reactions in the absence of infection (serum sickness) resemble the changes seen during an acute infectious disease The observations are interpreted as indicating an alteration in the permeability of the capillary wall, permitting the progressive loss of crytalloids (water, ions, and dextrose), colloids (albumin and other proteins), and red blood cells as the clinical severity of the disease increases These changes are often associated with alterations in blood volume and offer an explanation of the mechanism by which peripheral circulatory failure develops The permeability of cell membranes is probably also altered, whether the cells are directly parasitized or not. The alterations during arsenic intoxication, which are reversible by therapy with British anti-lewisite (BAL), offer a clue as to a possible intracellular mechanism through interference with enzyme groups The therapeutic possibilities are discussed, with emphasis on the correct use of crystalloids and proteins and the possible application of antihistamines and hormones in conjunction with specific chemotherapeutic agents in treatment. The early changes are due to toxemic products of the infecting organism, the later changes may result from humoral or cellular immune reactions The alterations in permeability are qualitatively similar, whether produced by a bacterial infection (meningococcemia), an extracellular infection due to a nematode (trichinosis), an intracellular infection caused by rickettsiae (Rocky Mountain spotted fever), or an immune reaction in the absence of infection (serum sickness)

Bowman Gray School of Medicine

CLINICAL NOTES

TUBERCULOSIS FOLLOWING CORTISONE THERAPY

REPORT OF A CASE OF RAPIDLY PROGRESSIVE PULMONARY TUBERCULOSIS FOLLOWING CORTISONE THERAPY FOR RHEUMATOID ARTHRITIS

Ernest Q King, M D
John B Johnson, M D ,
Gilbert S Batten, M D
and
Walter Lester Henry, M D , Washington, D C

Experts in the field of tuberculosis have expressed concern that in some cases prolonged use of cortisone or corticotrophin (ACTH) may cause a lowering of a patient's resistance against tuberculosis As a result the National Tuberculosis Association recently published the following recommendation [1]

> Because the action of ACTH and cortisone upon factors of resistance to tuberculosis has been shown to be deleterious in at least three species of experimental animals (mice, guinea pigs, and rabbits), and there is strongly suggestive evidence along the same lines in human beings, it is recommended that these substances not be used in patients with active tuberculosis, and that

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From the Federal Security Agency Food and Drug Administration (Dr King) and the Department of Medicine Howard University and Freedmen's Hospital (Drs Johnson Batten and Henry)

[1] Bull Nat Tuberc A 37:4 (Jan) 1951

they be used with extreme caution even in human beings with possibly latent tuberculosis infection, until such time as further investigative work has shown that such administration may be safe The routine diagnostic examination for tuberculosis of patients under physicians care is especially necessary for patients who are being considered for ACTH or cortisone therapy

Among the animal studies referred to in the above statement are those by Spain and Molomut[2] and Cummings[3] Freeman[4] reported a spread in one of two tuberculous patients under treatment with ACTH Bogan[5] and others have observed similar effects following cortisone therapy, but were not positive whether the effects owing to the drug or to the disease process itself

In view of these observations, we are presenting the following case which, based on clinical and roentgenologic findings, has been interpreted as the development of rapidly progressive pulmonary tuberculosis following cortisone therapy in a patient with rheumatoid arthritis, in whom there was no roentgenologic evidence of active or latent pulmonary tuberculosis when cortisone therapy was initiated, or during a period of 17 years prior to treatment

REPORT OF A CASE

R A, a woman aged 39, single, had been under medical observation for a period of over 17 years During her early twenties she had been frail and had shown easy fatigability Although not considered in good health, she was able to complete her education and follow her occupation Numerous x ray studies of her chest made during the past 17 years did not reveal any lesions which were interpreted as active or latent tuberculosis

In 1947, the patient first began to have joint manifestations starting in the ankles, consisting of pain, stiffness, and swelling Later, the knees wrists, and the joints of the hands became similarly involved In 1948, she was hospitalized because of pneumonitis, complicated with anemia, fever, and joint involvement Because of a failure to respond to penicillin, she received streptomycin for a short time A rash soon developed over the face, which was followed immediately by a generalized skin eruption over the body This episode was considered to represent a sensitivity reaction The rash disappeared soon after streptomycin was discontinued During this first hospitalization, laboratory data revealed evidence of a microcytic anemia and impairment of liver function as determined by the cephalin cholesterol liver function test Several roentgenologic examinations of the chest were made during this period These showed transient enlargement of the cardiac silhouette suggesting pericardial effusion After several months hospitalization, the patient was discharged, improved

About one year later, January 1950, the patient was again hospitalized complaining of weakness periodic numbness and tingling of the fingers, and pain, swelling, and stiffness of the joints of the wrists, hands shoulders, knees, and ankles A diagnosis of disseminated lupus erythematosus was entertained but biopsy of the skin and muscle failed to confirm this impression The arthritis was regarded as the rheumatoid type The patient was discharged after two months hospitalization, slightly improved

By May, 1950 the rheumatoid arthritis had become so severe as to incapacitate the patient completely The joint pain and stiffness were of such severity that she could not turn over in bed or get out of bed unassisted There was no x ray evidence of ankylosis At this time she was hospitalized for cortisone therapy

On May 11, 1950 the laboratory findings included a red blood cell count of 3 990 000 per cubic millimeter a hemoglobin value of 76% a hematocrit value of 34%, an erythrocyte sedimentation rate of 65%, a white blood cell count of 10,400, with a differential count of neutrophils 65% lymphocytes 34% basophils, 1%, with 1% reticulocytosis The urinalysis findings at that time were entirely normal On May 10, 1950, nonprotein nitrogen was 22 mg per 100 cc total protein 6 96 gm per 100 cc with 2 35 gm albumin and 4 61 gm globulin The x ray of the chest three months prior to the institution of cortisone therapy revealed that there was no significant tuberculous lesion (Fig. 1)

The patient was started on cortisone on May 12, 1950 and a total of 800 mg of cortisone was given by intramuscular injection during the first four days (Table contains complete dosage schedule) Within three hours after cortisone was started, the patient showed marked clinical improvement She had less pain and could move about in bed freely Within 48 hours the patient was able to arise from bed unassisted and was able literally to run slowly in the hospital corridors The patient was discharged from the hospital on May 17, 1950, much improved Cortisone treatment was continued on an outpatient basis with the objective of finding the minimum dosage which would give the maximum relief of symptoms

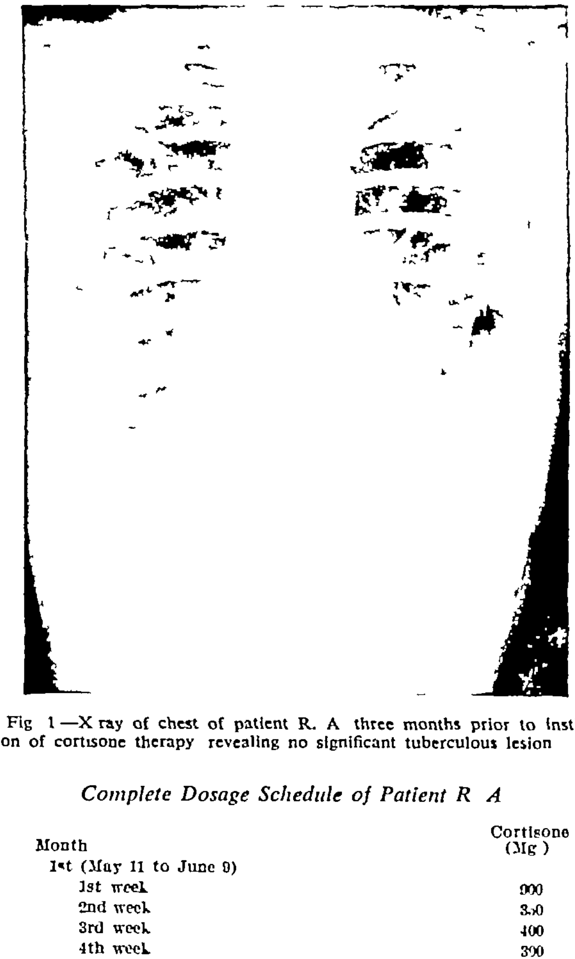

Fig 1—X ray of chest of patient R. A three months prior to institution of cortisone therapy revealing no significant tuberculous lesion

Complete Dosage Schedule of Patient R A

Month	Cortisone (Mg)
1st (May 11 to June 9)	
1st week	900
2nd week	350
3rd week	400
4th week	300
2nd (June 10 to July 10)	1,200
3rd (July 10 to Aug 11)	1 200
4th (Aug 12 to Sept 5)	900
5th and 6th (Sept 6 to Nov 10)	0
7th (Nov 11 to Dec 1)	1 400

At the time of discharge from the hospital, the patient had experienced no change in blood pressure change in heart size rounding of the face, or any other adverse signs of therapy

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2. Spain D M and Molomut N Effects of Cortisone on Development of Tuberculous Lesions in Guinea Pigs and on Their Modification by *Streptomycin Therapy* Am Rev Tuberc 62:337 (Oct.) 1950

3 Cummings M M Influence of Cortisone on Experimental Tuberculosis in Transactions of the 10th Veterans Administration Conference on Chemotherapy of Tuberculosis Jan 25 1951 to be published

4 Freeman S Fershing J Wang C C and Smith L. C Effect of *ACTH* on *Patients* with Pulmonary Tuberculosis in Mote J R Clinical ACTH Conference Proceedings of First Conference Philadelphia, The Blakiston Company 1950 p 509

5 Bogan, Emil Adrenocortrophic and Adrenocorticogenic Hormones in Tuberculosis in Transactions of the 10th Veterans Administration Conference on Chemotherapy of Tuberculosis Jan 25 1951 to be published

In August, 1950, during therapy with cortisone, she experienced an episode of pain in the right hip, diagnosed as probable bursitis This pain did not yield to cortisone therapy, but required adjunct therapy with procaine injections and x ray therapy

After mid-September, 1950, the patient felt so well that cortisone and other therapy was discontinued She was *sufficiently* improved so that she was able to return to her usual occupation

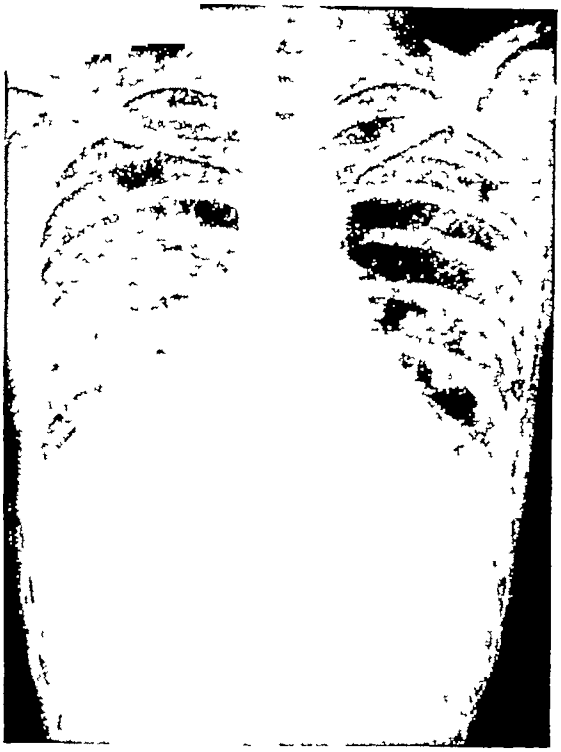

Fig 2.—X ray of chest of patient R A taken Nov 27 1950 showing a lesion that is characteristic of aspiration pneumonitis and in all probability tuberculosis

During the second week in November the arthritic pains recurred with such severity as to require cortisone therapy to be resumed At this time she was placed on oral cortisone, 25 mg daily On Nov 20, 1950 the dose was increased to 100 mg daily for nine days This dosage was maintained until Dec 1 1950 after which no further cortisone was given At this time hospitalization was advised because of facial edema hyperpnea, tachycardia, and x-ray evidence of pneumonitis at the right lung base However, the patient refused hospitalization

The roentgenologic findings on Nov 27 1950 revealed that there was in the right lung a largely hemogenous dense infiltration below the fifth posterior rib There were, however numerous rounded rarefactions approximating 8 cm in diameter In the left lung there was a scanty infiltration composed of faint spots The comment of the expert in the field of tuberculosis who interpreted the film was that the lesion is characteristic of aspiration pneumonitis and, in all probability, tuberculous The extension of the apical infiltration showing faintly in the left on the original films contributes to this impression (Fig 2)

On Jan 4, 1951 the patient entered the hospital critically ill She was febrile and extremely dyspneic, and her joints were exquisitely painful She had a weak, nonproductive cough The x ray at this time was interpreted by experts in the fields of roentgenology and tuberculosis (Fig 3) The right lung was completely occupied with infiltrations of greater density than in the film of November, with numerous punched out factions The left lung revealed extension of the infiltration with a rarefaction of 1 cm in the circle of the first rib Scanty infiltration was scattered through the rest of the lung From a roentgenologic standpoint this case was considered as being acute caseous tuberculosis of the type seen in the aged terminal uremics, diabetics, or in the very young Based on the combined roentgenologic and clinical findings, the diagnosis was that of a fulminating tuberculous pneumonia The patient s course was rapidly downhill, and she died on Jan 8, 1951 Request for autopsy was denied

COMMENT

It is realized that a confirmed diagnosis of tuberculosis was not made in this patient, since tubercle bacilli were not found while the patient was living, nor was an autopsy performed However, based on careful clinical and roentgenologic findings, the diagnosis was that this patient died from a rapidly progressive tuberculosis The case is reported primarily to emphasize that extreme care should be taken in ruling out active or latent tuberculosis prior to the institution of prolonged cortisone or ACTH therapy until further studies are made to determine whether these drugs may or may not have an *adverse effect in the spread of the disease*

In this case, the cortisone apparently had a deleterious effect on old, seemingly insignificant, tuberculous focuses in the patient's lung fields It has been reported [6] that in many infectious diseases the organisms continue to grow despite the administration of cortisone, though the patient feels better and in many cases eventually overcomes his infection When cortisone is given to tuberculous animals, a remarkable lack of limitation of spread of tuberculous processes is seen Fibroplasia is inhibited and freedom of movement through the tissues by the tubercle bacilli is facilitated

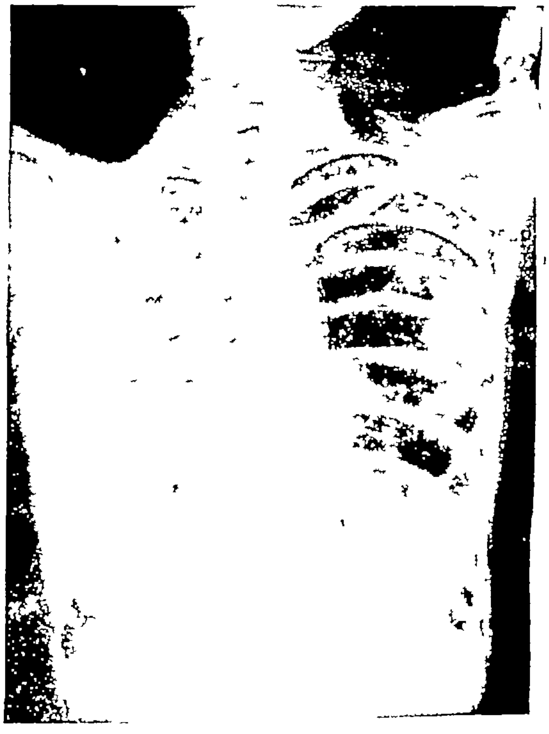

Fig 3—X ray of chest of patient R A taken Jan 4 1951 showing spread with x ray diagnosis of acute caseous tuberculosis

Presumably there was a spread of tubercle bacilli throughout this patient's lungs that was initiated by cortisone therapy Her generalized debilitated condition was a further factor in its rapid spread Interference with macrophage activity and depletion of lymphoid tissue by prolonged cortisone administration were most likely additional contributory deleterious factors

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[6] Kass E. H Ingbar S H and Finland M Effects of Adrenocorticotropic Hormone in Pneumonia Clinical Bacteriological and Serological Studies Ann Int. Med 33 1081 (Nov) 1950 Hench P Effects of Cortisone in Rheumatic Diseases Lancet 2 483 (Oct 21) 1950

X-ray studies have been conducted on a large group of patients who have received cortisone over prolonged periods In these patients, no instances of pulmonary complications have been encountered

It is recommended that all patients who are to undergo prolonged therapy with cortisone be carefully studied prior to and during treatment to determine whether a latent or active tuberculosis exists or develops

U S Food and Drug Administration Federal Security Agency Washington 25, D C (Dr King)

CORTISONE AND PULMONARY TUBERCULOSIS

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Poul Ottosen, M D
and
Charles A Brasher, M D , Mount Vernon, Mo

A warning against the use of corticotrophin (ACTH) and cortisone not only in patients with active tuberculosis but also in patients with latent tuberculous infection was issued a few months ago by the Committee on Medical Research of the American Trudeau Society, in the Bulletin of the National Tuberculosis Association[1] In a subsequent issue of the Bulletin, Tucker[2] again emphasized the danger of the use of ACTH and cortisone in the tuberculous patient

Spain and Molomut[3] described the effect of cortisone in guinea pigs experimentally infected with tuberculosis The lesions in those animals receiving cortisone appeared to be more extensive and less well localized than in control animals that did not receive cortisone

In an editorial in THE JOURNAL, March 24, 1951,[4] the suggestion is issued that caution should be exercised in the administration of cortisone to patients with tuberculosis This suggestion is made as a result of tests on tuberculous animals

To our knowledge, no report has been made, until the present time, about the ill effect cortisone may have on human beings who are infected with pulmonary tuberculosis We therefore feel that the following case report may be of interest to the medical profession

REPORT OF A CASE

A G a white woman aged 64, was admitted for the second time to the Missouri State Sanatorium on June 21 1950, because of far advanced bilateral tuberculosis with doubtful activity

The patient was first admitted to the Missouri State Sanatorium March 1, 1947 with a far advanced case of active pulmonary tuberculosis Figure 1 shows the first x ray taken at the time of her first admission

She gave a history of gradual onset of her disease with cough chest pain low grade temperature, and gradual loss of weight of about two years duration

In April, 1935 she was a patient at the Mayo Clinic Rochester Minn and a diagnosis of rheumatoid arthritis and bronchial asthma was made X rays of the chest were negative at that time

During her first admission she had 21 sputum examinations for tubercle bacilli All were negative on direct smear Guinea pig inoculation and culture were both negative for acid fast organisms Tuberculin skin tests were positive on old tuberculin dilution 0 005 Other tests made gave no further information A diagnosis of pulmonary tuberculosis was made at that time entirely from chest x-rays, evidence of positive skin test, and from clinical history

Fig. 1 —First x ray of patient A G taken at the time of her first admission to the Missouri State Sanatorium March 1 1947

On her first admission to the Missouri State Sanatorium she also showed evidence of marked rheumatoid arthritis and secondary anemia

During this first admission the patient had no other treatment than bed rest and symptomatic treatment for arthritis She was discharged Nov 28, 1948 At discharge the patient s tuberculosis was considered as arrested

On June 21, 1950 the patient was readmitted because of an increase in cough and expectoration

Figure 2 shows the chest x ray made at the time of readmission It is noted that there was no change in the x ray appearance since her first admission

The readmission diagnosis was far advanced pulmonary tuberculosis with doubtful activity, and chronic rheumatoid arthritis with secondary anemia Laboratory findings showed 11 sputum examinations to be negative for acid fast bacilli tuberculin skin test positive, purified protein derivative (tuberculin) dilution 0 0001 red blood cell count 3,800,000 hemoglobin, 71%, white blood cell count 3,100, sedimentation rate (Cutler method) 31 urine normal Kahn test negative

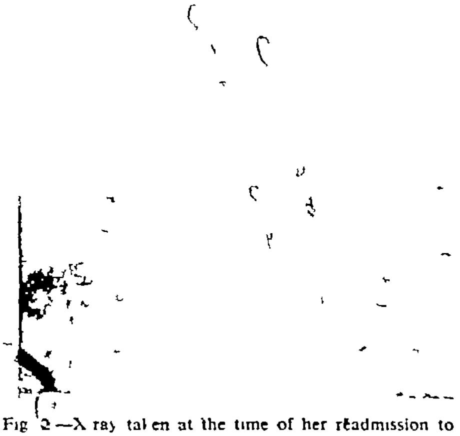

Fig 2 —X ray taken at the time of her readmission to the Sanatorium June 21 1950

From the Medical Department of the Missouri State Sanatorium Mount Vernon Mo resident physician (Drs Popp and Ottosen) and Superintendent (Dr Brasher)

[1] ATS Warns on ACTH and Cortisone Effect on Tuberculosis Urges Tests Bull Nat Tuberc A 37 4 (Jan) 1951

[2] Tucker W B The Use of Drugs in TB Treatment, Bull Nat Tuberc A 37 21 (Feb) 1951

[3] Spain D M, and Molomut N Effects of Cortisone on Development of Tuberculous Lesions in Guinea Pigs and on Their Modification by Streptomycin Therapy Am Rev Tuberc 62 337 (Oct) 1950

[4] Cortisone in Tuberculosis Editorial J A M A 145 907 (March 24) 1951

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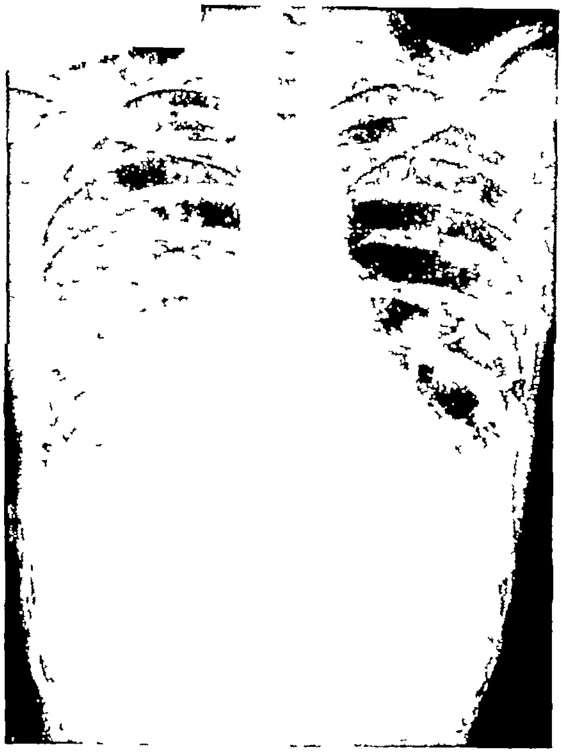

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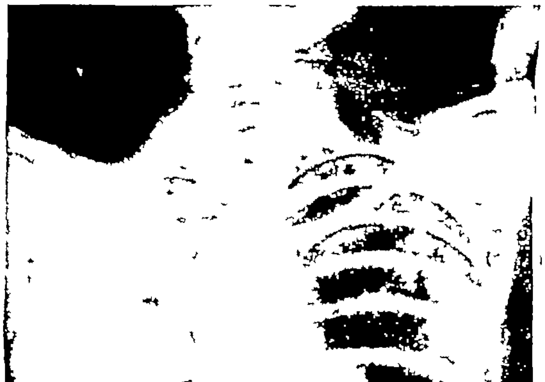

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Presumably there was a spread of tubercle bacilli throughout this patient's lungs that was initiated by cortisone therapy Her generalized debilitated condition was a further factor in its rapid spread Interference with macrophage activity and depletion of lymphoid tissue by prolonged cortisone administration were most likely additional contributory deleterious factors

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[6] Kass E. H Ingbar S H and Finland M Effects of Adrenocorticotropic Hormone in Pneumonia Clinical Bacteriological and Serological Studies *Ann Int Med* 33 1081 (Nov) 1950 Hench P Effects of Cortisone in Rheumatic Diseases Lancet 2 483 (Oct 21) 1950

X-ray studies have been conducted on a large group of patients who have received cortisone over prolonged periods In these patients, no instances of pulmonary complications have been encountered

It is recommended that all patients who are to undergo prolonged therapy with cortisone be carefully studied prior to and during treatment to determine whether a latent or active tuberculosis exists or develops

U S Food and Drug Administration, Federal Security Agency Washington 25, D C (Dr King)

CORTISONE AND PULMONARY TUBERCULOSIS

Carol G Popp, M D
Poul Ottosen, M D
and
Charles A Brasher, M D, Mount Vernon, Mo

A warning against the use of corticotrophin (ACTH) and cortisone not only in patients with active tuberculosis but also in patients with latent tuberculous infection was issued a few months ago by the Committee on Medical Research of the American Trudeau Society, in the Bulletin of the National Tuberculosis Association [1] In a subsequent issue of the Bulletin, Tucker [2] again emphasized the danger of the use of ACTH and cortisone in the tuberculous patient

Spain and Molomut [3] described the effect of cortisone in guinea pigs experimentally infected with tuberculosis The lesions in those animals receiving cortisone appeared to be more extensive and less well localized than in control animals that did not receive cortisone

In an editorial in THE JOURNAL, March 24, 1951,[4] the suggestion is issued that caution should be exercised in the administration of cortisone to patients with tuberculosis This suggestion is made as a result of tests on tuberculous animals

To our knowledge, no report has been made, until the present time, about the ill effect cortisone may have on human beings who are infected with pulmonary tuberculosis We therefore feel that the following case report may be of interest to the medical profession

REPORT OF A CASE

A G, a white woman aged 64 was admitted for the second time to the Missouri State Sanatorium on June 21 1950 because of far advanced bilateral tuberculosis with doubtful activity

The patient was first admitted to the Missouri State Sanatorium March 1 1947 with a far advanced case of active pulmonary tuberculosis Figure 1 shows the first x ray taken at the time of her first admission

She gave a history of gradual onset of her disease with cough, chest pain low grade temperature, and gradual loss of weight of about two years duration

In April 1935 she was a patient at the Mayo Clinic Rochester Minn and a diagnosis of rheumatoid arthritis and bronchial asthma was made X-rays of the chest were negative at that time

During her first admission she had 21 sputum examinations for tubercle bacilli All were negative on direct smear Guinea pig inoculation and culture were both negative for acid fast organisms Tuberculin skin tests were positive on old tuberculin, dilution 0 005 Other tests made gave no further information A diagnosis of pulmonary tuberculosis was made at that time entirely from chest x rays, evidence of positive skin test, and from clinical history

Fig. 1 —First x ray of patient A G taken at the time of her first admission to the Missouri State Sanatorium March 1 1947

On her first admission to the Missouri State Sanatorium she also showed evidence of marked rheumatoid arthritis and secondary anemia

During this first admission the patient had no other treatment than bed rest and symptomatic treatment for arthritis She was discharged Nov 28, 1948 At discharge the patient s tuberculosis was considered as arrested

On June 21, 1950 the patient was readmitted because of an increase in cough and expectoration

Figure 2 shows the chest x ray made at the time of readmission It is noted that there was no change in the x ray appearance since her first admission

The readmission diagnosis was far advanced pulmonary tuberculosis with doubtful activity, and chronic rheumatoid arthritis with secondary anemia Laboratory findings showed 11 sputum examinations to be negative for acid fast bacilli, tuberculin skin test positive, purified protein derivative (tuberculin) dilution 0 0001 red blood cell count 3,800,000, hemoglobin, 71%, white blood cell count 3,100 sedimentation rate (Cutler method) 31, urine normal Kahn test negative

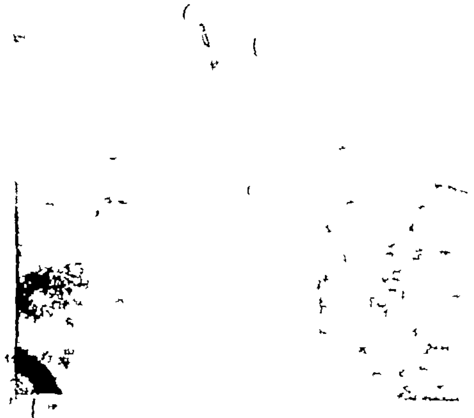

Fig 2.—X ray taken at the time of her readmission to the Sanatorium June 21 1950

From the Medical Department of the Missouri State Sanatorium Mount Vernon Mo resident physicians (Drs Popp and Ottosen) and Superintendent (Dr Brasher)

[1] ATS Warns on ACTH and Cortisone Effect on Tuberculosis Urges Tests Bull Nat Tuberc A 37 4 (Jan) 1951

[2] Tucker W B The Use of Drugs in TB Treatment Bull Nat. Tuberc A 37 21 (Feb) 1951

[3] Spain D M and Molomut N Effects of Cortisone on Development of Tuberculous Lesions in Guinea Pigs and on Their Modification by Streptomycin Therapy Am. Rev Tuberc 62 337 (Oct) 1950

[4] Cortisone in Tuberculosis Editorial J A M A 145 907 (March 24) 1951

For her pulmonary tuberculosis, bed rest was advised

Because of severe pains in her joints treatment with cortisone was started on Aug 10, 1950 Dosage was as follows 100 mg every eight hours the first day, 100 mg every 12 hr the second day, 100 mg the third day and thereafter On Aug 23, 1950, cortisone was reduced to 100 mg every 48 hr until a total of 2 500 mg was given During this course of cortisone from Aug 10, 1950, to Sept 8, 1950, the patient s pulmonary condition showed no definite changes, as observed by fluoroscopy and clinical observation Unfortunately, no chest x-ray was taken during this period because the patient did not show any symptoms of progression of her pulmonary lesion, nor did we have any knowledge, at that time, that cortisone could produce a re activation of pulmonary tuberculosis Clinically, the arthritis improved considerably, and the pain subsided almost completely after the third day of treatment The anemia also improved, the erythrocyte count increasing to 4,400,000, and hemoglobin to 80% Blood sugar and blood pressure remained within normal limits

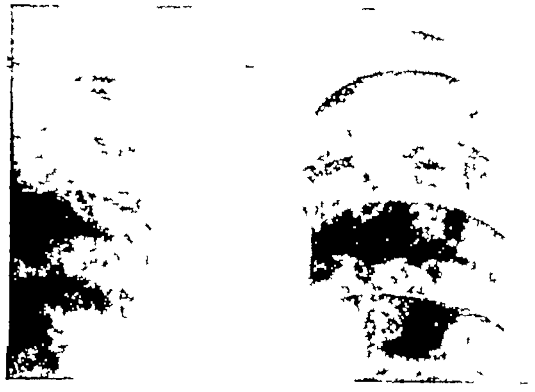

Fig 3 —X ray taken on Oct 27 1950 showing cavity formation in the subapical region of the left lung

Three weeks after the first course was discontinued, severe rheumatic symptoms again developed in the patient and a new course of cortisone was started on Sept 27, 1950, the dosage being the same as in the previous course In this second course the patient received a total of 1 500 mg of cortisone Again the patient s rheumatic condition improved rapidly, and her physical condition was satisfactory

On Oct 14, 1950, the patient had a moderate hemoptysis of about 6 to 8 ounces (0 18 to 0 24 L) She was put on strict bed rest, and cortisone was discontinued On Oct 27, 1950, a chest x ray was made, which showed cavity formation in the subapical region of the left lung (Fig 3) At the same time the patient had sputum examinations which were positive for acid-fast bacilli on direct smear This was the first time in the patient's four to-five year history of pulmonary tuberculosis that tubercle bacilli were found in her sputum

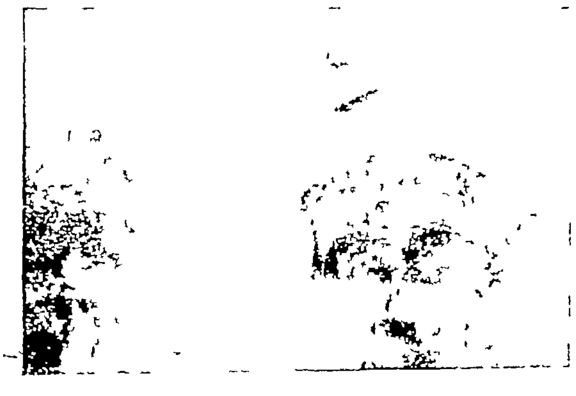

Fig 4 —X ray taken Jan 27 1951 showing marked improvement of the lesion in the left lung, with almost complete closure of the subapical cavity

Streptomycin, 1 gm daily, and para aminosalicylic acid (PAS) 8 gm daily, were started on Oct 27, 1950 There was no recurrence of hemoptysis

An x-ray taken Jan 27, 1951, showed marked improvement of the lesion in the left lung with almost complete closure of the subapical cavity (Fig 4)

At the present the patient is still in the Sanatorium A recent series of sputum examinations were negative for acid fast bacilli Her general condition and clinical findings referable to the chest are not suggestive of activity of her pulmonary tuberculosis

COMMENT

The case reported suggests that an apparently arrested case of pulmonary tuberculosis has been activated by administering cortisone for arthritis We feel justified in arriving at this conclusion because we have been unable to detect any other reasons for the reactivation, and the patient had no symptoms indicating activity of her pulmonary condition during the two-to-three-month period of observation prior to the administration of cortisone

SUMMARY

A case of a 64-year-old white woman with pulmonary tuberculosis that was activated after receiving a total of 4,000 mg of cortisone is reported

DEVELOPMENT OF ACTIVE PULMONARY TUBERCULOSIS DURING ACTH AND CORTISONE THERAPY

Leo Fred, M D , Melvin H Levin, M D ,
J Bernard Rivo, M D
and
Thomas F Barrett, M D , Los Angeles

Of a group of patients with rheumatoid arthritis who had been receiving corticotrophin (ACTH) and/or cortisone in our arthritis clinic, clinical manifestations of active tuberculosis developed in one

Because of the possibility that the appearance of fulminating clinical tuberculosis in this patient and the administration of the aforementioned widely used hormones were related rather than coincidental events, we consider it advisable to publicize this case history in detail

REPORT OF A CASE

A white man aged 58 whose rheumatoid arthritis first became evident in January, 1949 was first admitted to Wadsworth Hospital in July, 1949 because of hepatitis His arthritis was noted to improve markedly while he was jaundiced, but recurred with the subsidence of the hepatitis A liver biopsy at that time was interpreted as demonstrating cirrhosis and superimposed hepatitis He was discharged in October, 1949, and got along well until May, 1950, when he had a generalized exacerbation of his arthritis for which he was given combined vitamin C and desoxycorticosterone acetate by his private physician which resulted in a marked aggravation of his symptoms with no objective changes During May and June, 1950, he noted a low grade fever and anorexia and a 20 lb (9 kg) weight loss and therefore was admitted to Wadsworth Hospital again on June 20 1950

His family history is not significant Previous to his present ailments, he had been well

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From the Medical Service Wadsworth Hospital Veterans Administration Center Los Angeles and the Department of Medicine University of California at Los Angeles

Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions of the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration

Physical examination revealed a thin, poorly nourished white man who moved carefully and slowly with obvious pain on motion His blood pressure was 110/70 his pulse was regular, and the rate was 70 beats per minute His temperature was 100 2 F There was limitation of motion of his neck and all peripheral joints with increased heat, swelling, and tenderness of his proximal phalangeal, metacarpophalangeal, and ankle joints bilaterally His liver edge was felt 4 fingerbreadths below the right costal margin and was nontender and smooth Epitrochlear and axillary glands were palpable There was a subcutaneous nodule on the right upper arm Several spider angiomas were noted over his upper thorax His axillary and pubic hair was sparse The rest of his examination was considered to be within normal limits A roentgenogram of the thorax showed nothing significant (Fig 1) Roentgenograms of the involved extremities revealed soft tissue swelling but no gross bone changes except for generalized osteoporosis The erythrocyte count was 4,450 000 with a hemoglobin value of 86% The leukocyte count was 9 500, with 54% polymorphonuclear leukocytes, 36% lymphocytes, 5% monocytes, and 5% eosinophiles The specific gravity of his urine was 1 023 with no abnormal constituents The Kahn test was negative The sedimentation rate (Wintrobe) was 22 mm per hour Blood urea nitrogen was 8 mg per 100 cc and serum uric acid was 2 3 mg per 100 cc The sulfobromophthalein test showed 8% retention in 45 minutes, thymol turbidity 17 units, and thymol flocculation 4+ Total serum proteins were 6 gm with albumin 3 1 gm and globulin 2 9 gm Ketosteroids in urine specimens taken over a 24-hour period varied from 3 1 to 6 7 mg

Because of daily temperature elevations varying between 100 and 101 F with no new abnormal physical signs, urine cultures and blood cultures were done with no growth demonstrated in any A muscle biopsy revealed nothing significant, and a lymph node biopsy was reported as demonstrating nonspecific lymphadenitis The subcutaneous nodule on his right arm was also subjected to biopsy and showed the typical changes of a rheumatoid nodule A sternal marrow examination revealed a normal dispersion of marrow elements, and culture of the marrow was negative Agglutination tests for typhoid, paratyphoid, and brucellosis were also negative

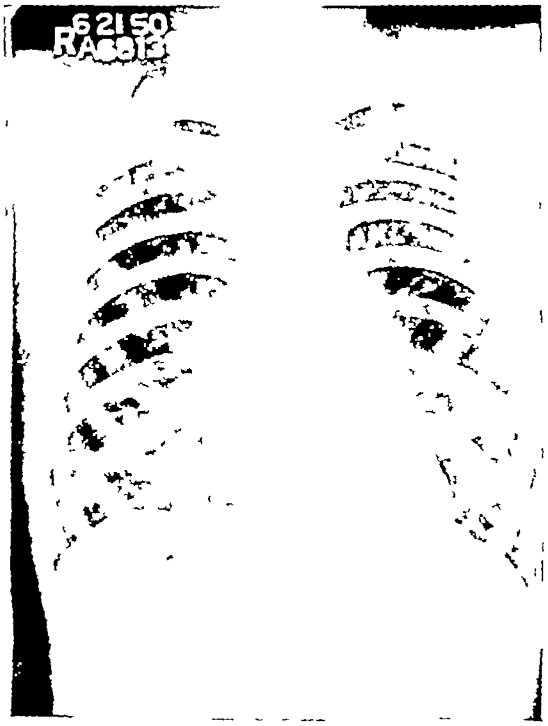

Fig 1 —Chest roentgenogram of patient in case report taken 10 weeks before hormone therapy

The patient was considered to have active rheumatoid arthritis and chronic hepatitis with fibrosis Since no other cause could be found for his fever, it was considered to be a manifestation of his rheumatoid disease, and treatment in this direction was instituted He was given Δ⁵ pregnenolone, 300 mg daily, for two weeks with no subjective or objective improvement Pregnenolone was then discontinued, and he was kept on acetylsalicylic acid, a high protein high caloric diet, and paraffin baths for his affected extremities There was mild improvement of his arthritis on this regimen, although his joints were still warm, swollen and tender He had no fever during this period On Sept 1, 1950 because of a slight nonproductive cough with no new physical signs on examination, a chest x ray was taken (Fig 2) which again revealed no abnormality On this date, he was started on ACTH 20 mg four times a day and this was decreased to 15 mg four times a day on Sept 20 1950 On Oct 3 1950, his temperature was 98 8 F, there was no objective evidence of arthritis discernible, he had gained 18 lb (8 kg) the sedimentation rate (Wintrobe) was 6 mm per hour, the white blood count was 11,000 with a normal differential and he felt very well On Oct 11, 1950, his temperature suddenly rose to 102 4 F accompanied with a marked generalized exacerbation of his arthritis, a sedimentation rate (Wintrobe) of 32 mm per hour and a leukocyte count of 13 800, with 65% polymorphonuclear leukocytes 30% lymphocytes, 3% monocytes, and 2% eosinophiles At this time 100 mg of cortisone was added to his 60 mg of ACTH daily, after which he became afebrile and his arthritis improved again However, on Oct 20 1950 his temperature again rose, this time to 104 F, his cough increased and became productive and his arthritis became worse ACTH was discontinued on this date, but he continued to receive 150 mg of cortisone daily On Oct 31, 1950 an x-ray of his chest revealed an extensive inflammatory process in his right upper lobe (Fig 3) He was considered to have pneumonia and he was started on procaine penicillin (crysticillin®) and aureomycin His sputum, examined prior to antibiotic therapy contained a mixed type of flora with no predominating organism and was not purulent Two sputa concentrates were negative for acid fast bacilli on Nov 1, 1950 Blood cultures were negative The spiking temperature continued On Nov 3, 1950, many colonies of Klebsiella type B were reported in his sputum and therefore his therapy was changed to streptomycin and sulfadiazine Blood cultures remained negative He continued his febrile course but did not appear or feel as ill as one would have expected considering

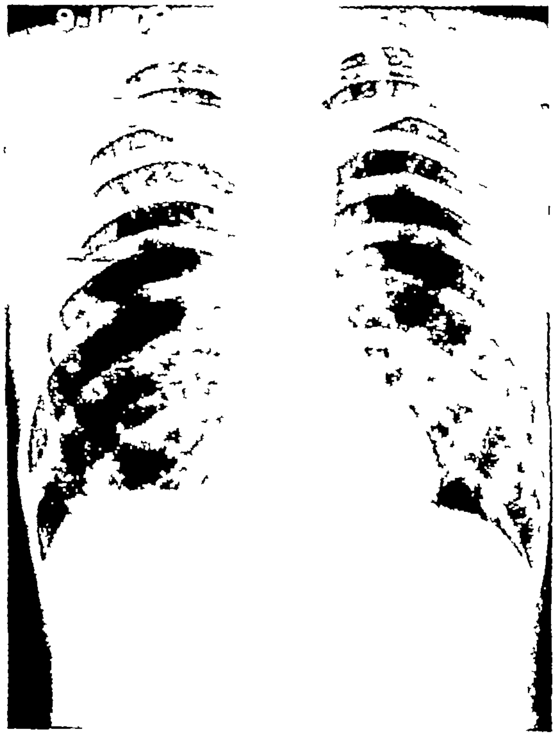
Fig 2 —Chest roentgenogram taken the day hormone treatment began

the signs On Nov 8, 1950, cortisone was discontinued because it was felt that it might be adversely affecting his lung infection X-rays revealed continuing extension of his pulmonary lesion On Nov 15, 1950, streptomycin and sulfadiazine were discontinued and the patient was started on intravenous aureomycin

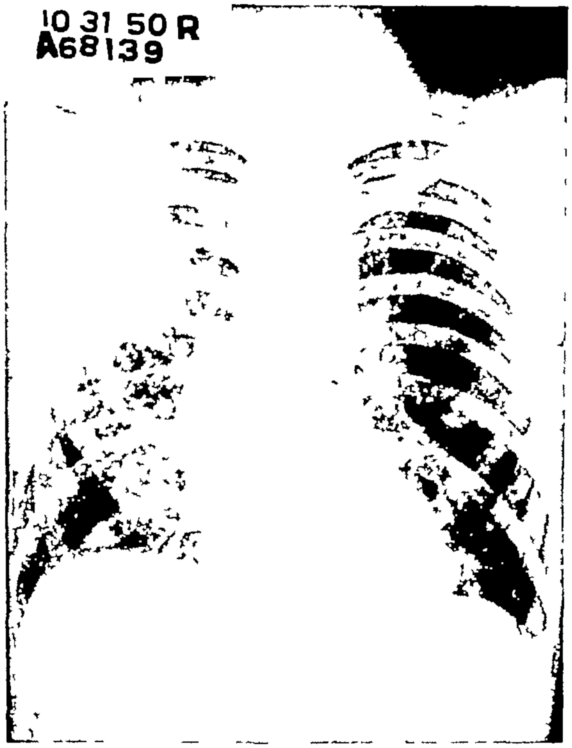

Fig 3 —Chest roentgenogram depicting the findings immediately before hormone therapy was stopped

After the cortisone was discontinued, his course seemed to go downhill quickly and he appeared depressed and complained of increasing weakness and anorexia On Nov 16, 1950, his sputum was found to be loaded with acid fast bacilli, but no Klebsiella organisms and he was transferred to our Tuberculosis Section Chest x ray on Dec 28, 1950 (Fig 4) revealed early multiple cavitation Recent sputum examinations have continued to show many acid fast bacilli He is now receiving streptomycin and para aminosalicylic acid (PAS) with poor response thus far

COMMENT

This patient, while receiving ACTH and cortisone, suddenly manifested clinical evidence of active pulmonary tuberculosis His chest x-ray on Sept 1, 1950, even on retrospective examination, revealed no abnormality, but a chest x-ray six weeks later showed extensive lung involvement which proved to be tuberculosis

It is possible that this sequence of events had no relation to the administration of the hormones He may have had latent tuberculosis (there is a Ghon focus in the left lower lung field) which became clinically active for unknown reasons, or he may have been reinfected during the time he spent next to a patient with tracheobronchial tuberculosis,[1] resulting in an acute fulminating type of tuberculous pneumonia which is prone to occur in patients already harboring chronic disease such as cirrhosis

On the other hand, he was receiving hormones which, we are beginning to realize, may, among other effects, exert a powerful influence on the physiological reactions of the body to insult [2] Present evidence suggests that these hormones, through some as yet unknown mechanism, have the ability to temporarily depress inflammatory response to injury, regardless of etiology [3] This "antiphlogistic action," as Dougherty and Schneebeli call it,[4] probably explains the ameliorative effects of the hormones on the so-called collagen diseases, a group of disorders in which mesenchymal tissue hyper-reactivity, possibly secondary to noxious antibody stimulation [3] or other phlogogenic stimulus, is the main incapacitating element (The release of this temporary depression of inflammatory reaction, which occurs when the hormones are discontinued, has in animals been followed by a *rebound* sensitized-tissue reaction more intense and destructive than the control sensitized-tissue response [5] We think we have also observed this rebound phenomenon in man, and we expect to report our observations in detail at a later date For example, after stopping the administration of ACTH or cortisone, in several of our patients a much severer grade of arthritis than they originally had flared up, and in one patient with rheumatoid arthritis who died six weeks after discontinuance of the hormones autopsy showed early fulminating disseminated periarteritis nodosa lesions which did not appear to be more than several weeks old It therefore appears to us that the possibility of initiating or aggravat-

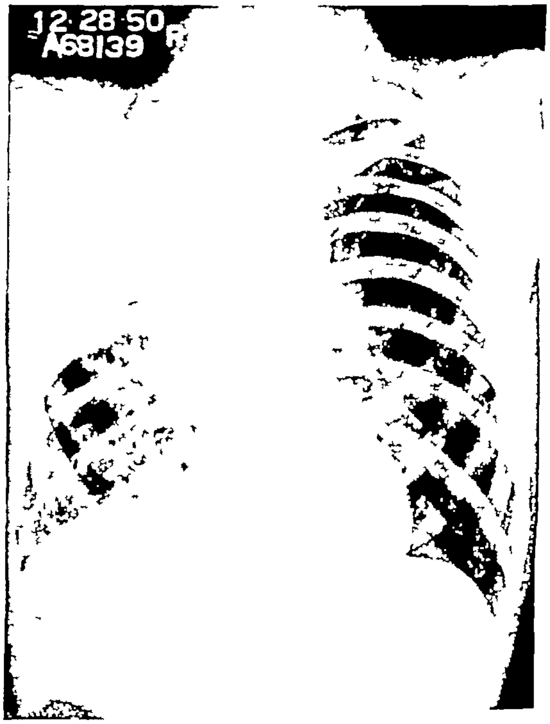

Fig. 4 —Chest roentgenogram showing the rapid progression of tuberculosis eight weeks later

ing human tissue hyperreactivity disorders with these hormones is one that deserves serious consideration)

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[1] In August 1950, this patient was in bed for one week next to a patient who was diagnosed later as having tracheobronchial tuberculosis.

[2] Other effects noted while the patient was receiving the hormones were edema (relieved by 80 mg sodium diet and parenteral mercurial diuretics) moon face, diabetic glucose tolerance curve mild euphoria wound separation and delayed healing of biopsy sites.

[3] Gubner R Therapeutic Suppression of Tissue Reactivity Am. J M Sc 22 169 (Feb) 1951

[4] Dougherty T F and Schneebeli G L. Role of Cortisone in Regulation of Inflammation Proc. Soc Exper Biol & Med 75 : 854 (Dec.) 1950

[5] Long J B and Favour C. B Ability of ACTH and Cortisone to Delayed Type Bacterial Hypersensitivity Bull Johns Hopkins Hosp 155 (Sept) 1950

Concerning the suppressive effect of these hormones on allergic inflammatory response, Thorn[6] states that "ACTH or cortisone may dissociate the harmful effects of hypersensitivity from the beneficial reactions of immunity " However, it seems to us that this possibility should be viewed with great suspicion until there is definite evidence in its favor The effect of these hormones on immune mechanisms is certainly not clear at the present time For example, antibody levels have variously been reported increased, unchanged,[8] and decreased,[9] following administration of adrenotropic or adrenocortical hormones Also, the possible relationship between the lympholytic action of these hormones and antibody production or carriage, and the explanation for the reduction of serum gamma globulin[6] and the decrease in spleen size[10] following the administration of these hormones are still unknown But even leaving aside possible hormonal influences on production or carriage levels of immune bodies, it is conceivable to us that this hormone ability to depress inflammatory reaction, although seemingly useful in the hyperreactivity disorders, could, paradoxically, harm the organ by interfering with what is still considered the body's first line of defense in those disorders in which inflammatory reaction seems to serve a useful service, as in infections The physiological inflammatory reaction to a pathogen attempts to act not only as a physical barrier to the dissemination of the pathogen but also, to describe it simply, builds to the field of battle emergency lines of supply in the form of new blood vessels through which can flow a greater number of weapons such as macrophages and immune bodies If this defensive effort is depressed by the hormones, we can visualize a situation, such as may have occurred in our patient, in which the invading organism, unaffected by the hormones,[11] continues to multiply,[12] and through its toxic products attacks and destroys tissue which can temporarily neither defend nor repair itself Since inflammatory reaction is depressed, objective manifestations of inflammatory reaction products such as fever and increased sedimentation rate, may be diminished or absent, and the patient may, paradoxically, feel and look better in spite of continuing tissue damage[13]

The effect of these hormones on specific infections has not been investigated to any great extent Schwartzman has demonstrated the enhancing effects of cortisone and combined cortisone and ACTH on poliomyelitis infections in hamsters and mice ACTH alone fail to produce this effect[14] In humans, ACTH alone administered to patients already having poliomyelitis appeared to have no effect on the course of the disease[15] One wonders, in the light of Schwartzman's work, what effect cortisone might have had Perhaps the answer will be forthcoming during the next poliomyelitis epidemic if the supply of cortisone holds out It is intriguing to attempt to associate the stress occurring in youngsters who overexercise with the frequent appearance in them of clinical poliomyelitis during epidemics Could their increased adrenocortical output, perhaps through its lytic effect on fixed lymphoid tissue[16] with consequent release of enmeshed virus, or through some other unknown mechanism, be playing a part in activating the disease? Certainly, pregnant women, who have been shown to have increased adrenocortical activity manifest a greater incidence of poliomyelitis than nonpregnant women To theorize further, it is a common medical opinion that subclinical infections in general may become clinically evident when the "resistance" of the organism is lowered, as by chilling, anxiety states, overactivity, and other causes Might it be that these resistance-lowering circumstances are stress situations which, if prolonged enough, increase adrenal cortical output to the extent of activating in some manner the sub-clinical infection?

Concerning bacterial infections, there is evidence that ACTH and cortisone may be capable of enhancing the susceptibility of tissues to the primary effect of bacterial toxins[17] Mogabgab and Thomas found a marked enhancement of blood and tissue infection by Streptococcus hemolyticus in rabbits following injection of cortisone[18]

In tuberculosis, Spain and Molomut[19] have shown that tuberculous lesions in guinea pigs receiving cortisone were more extensive, more widely distributed, and less well organized than in control groups They feel that cortisone, through its inhibitory effect on formation of granulation tissue, inhibition of macrophage activity, and depletion of lymphocyte reserves, decreases resistance to progression of a tuberculous lesion Tubercle bacilli in a rat, an animal which is normally resistant to tuberculosis as compared to the guinea pig and man who are naturally susceptible to tuberculosis, under the influence of cortisone are able to multiply more rapidly, produce more diffuse disease, disseminate widely, and result in death of the animal[20] During the earlier investigations of the effect of these hormones in various disorders in humans, ACTH was administered to patients with active pulmonary tuberculosis, and although signs of inflammatory reaction products, such as fever and purulent sputum, were diminished, as one would expect, the lesions as seen on x-rays progressed[18]

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[6] Thorn G W Forsham P H Frawley T F Hill S R Jr Roche M Staehelin D and Wilson D L Clinical Usefulness of ACTH and Cortisone New England J Med 242 783 (May 18) 1950

[7] Dougherty T F Chase J H and White A Pituitary Adrenal Cortical Control of Antibody Release from Lymphocytes Explanation of Anamnestic Response Proc Soc Exper Biol & Med 58 135 (Feb) 1945

[8] Herbert P H and de Vries J A Administration of Adrenocorticotrophic Hormone to Normal Human Subjects Effect of Leucocytes in Blood and on Circulating Antibody Levels Endocrinology 44:259 (March) 1949

[9] Germuth F G, Jr and Ottinger B Effect of 17 Hydroxy 11 Dehydrocorticosterone (Compound E) and of ACTH on Arthus Reaction and Antibody Formation in Rabbit Proc Soc Exper Biol & Med 74 815 (Aug) 1950

[10] Molomut N Spain D M and Haber A Effect of Cortisone on Spleen in Mice Proc Soc Exper Biol & Med 73 416 (March) 1950

[11] Finland M Kass E H and Ingbar S H Effects of ACTH in Primary Atypical Pneumonia and in Pneumococcal Pneumonia in Mote J R Clinical ACTH Conference Proceedings of First Conference Philadelphia The Blakiston Company 1950 p. 528

[12] Lurie M B Zappasodi P Dannenberg, A M and Swartz, I B Constitutional Factors in Resistance to Infection Effect of Cortisone on Pathogenesis of Tuberculosis Science 113 234 (March 2) 1951

[13] Freeman S Pershing J Wang C C and Smith L C Effect of ACTH on Patients with Pulmonary Tuberculosis in Mote J R Clinical ACTH Conference Proceedings of First Conference Philadelphia The Blakiston Company 1950 pp 509 521

[14] Schwartzman G Enhancing Effect of Cortisone upon Poliomyelitis Infection (Strain MEF1) in Hamsters and Mice Proc. Soc Exper Biol & Med 75:835 (Dec) 1950

[15] Coriell L L and others Use of ACTH in Poliomyelitis in Mote J R Clinical ACTH Conference Proceedings of First Conference Philadelphia The Blakiston Company 1950 pp 588 59

[16] Dougherty T F and White A Effect of Pituitary Adrenotropic Hormone on Lymphoid Tissue Proc Soc Exper Biol & Med 53 132 (June) 1943

[17] Thomas L and Mogabgab W J Hemorrhagic Skin Lesions Produced by Intradermal Meningococcus Toxin in Rabbits Following Treatment with ACTH or Cortisone Proc Soc. Exper Biol & Med. 74:829 (Aug.) 1950

[18] Mogabgab W J and Thomas L read before the Central Society for Clinical Research 23d Annual Meeting, Chicago Nov 3-4 1950

[19] Spain D M and Molomut N Effect of Cortisone on Development of Tuberculous Lesions in Guinea Pigs and on Their Modification by Streptomycin Therapy Am Rev Tuberc 62 337 (Oct) 1950

In attempting to account for the presence of live tubercle bacilli in the lungs of our patient, the possibilities seem to be (1) a latent infection, (2) reinfection with exogenous tubercle bacilli, (3) destruction of lung tissue by pneumonitis of pyogenic origin with the breaking up of old healed focuses still containing live bacilli, and (4) hormonal fibrolysis of old healed lesions with release of live tubercle bacilli Concerning this last possibility, however, present evidence suggests that the adrenocortical hormones do not have a fibrolytic action, i e, they have no effect on granulation tissue already formed[10] It is impossible for us to state definitely which mechanism was involved in our case

The Committee on Medical Research of the Trudeau Society recently warned of the use of ACTH and cortisone in patients with active tuberculosis or possible latent tuberculous infection[21] They recommend routine diagnostic examination for tuberculosis of patients who are being considered for ACTH or cortisone therapy, a recommendation with which we heartily concur and to which we hope this report of our unfortunate patient will lend strong emphasis However, we think this warning should include all infections, particularly those for which we have as yet no specific therapy, since we might not be able to put out the fire once we had stirred up its embers Because of the suggestive evidence that these hormones might be hazardous, we have become extremely hesitant in administering them to patients for therapeutic purposes except as a last-resort measure Perhaps we are being overcautious, but as clinicians we feel that we have no right to employ any form of therapy until it has been proved to be not only effective but also, and more important, not inimical to the welfare of the body

SUMMARY

While he was receiving corticotrophin (ACTH) and cortisone for rheumatoid arthritis, active fulminant pulmonary tuberculosis developed in one of our patients

The possible relationship between the administration of these hormones and the appearance of his tuberculosis, and infections in general, is discussed

It is suggested that, until more information concerning the effects of these hormones is obtained, they should be used with extreme caution

ADDENDUM

Since this paper was submitted for publication, the above patient died At autopsy, bilateral caseo-cavernous tuberculosis and confluent tuberculous pneumonia were found Additional findings were rheumatoid arthritis and hepatic cirrhosis

Other examples of complicating infections proved at autopsy in patients receiving these hormones are as follows

1 Diffuse purulent meningitis developed in a patient with multiple myeloma

2 A patient with acute lymphatic leukemia died with acute disseminated actinomycosis

3 A patient treated for stasis dermatitis was found to have miliary tuberculosis

The detailed report of these cases will be published at a later date

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20 Michael M Jr Cummings M M and Bloom W L Course of Experimental Tuberculosis in Albino Rat as Influenced by Cortisone Proc. Soc Exper Biol & Med 75 613 (Nov) 1950

21 Bull Nat Tuberc A 37 4 (Jan.) 1951

SARCOIDOSIS BENEFITED BY PREGNANCY

REPORT OF A CASE

Robert H Berman, M D, Detroit

A review of many textbooks of medicine and of obstetrics revealed no mention of pregnancy in sarcoidosis There have been, however, some reports of pregnancy in the remission or quiescent stage of the disease The removal of the spleen in a patient in the fifth month of pregnancy complicated by purpura has been reported[1] The sarcoidosis was apparently not suspected until the spleen was sectioned No other evidence of sarcoidosis was noted The pregnancy terminated normally In the same article, another similar case was briefly mentioned in the discussion Dr Warfield T Longcope stated that he had not found any pregnant patient with active sarcoidosis in the large series of cases he had studied He mentioned, however, that one of his patients did have two successful pregnancies after what appeared to be recovery from a rather extensive sarcoid involvement of the lungs[2] In a clinical review of 11 cases of sarcoidosis, three of the four female patients described had had pregnancies Two had full-term pregnancies, one, a miscarriage[3] The case histories, however, gave no indication as to whether the pregnancies occurred before or during the sarcoid involvement Recently there was a report of a patient with sarcoidosis who had two pregnancies[4] The first pregnancy was aborted, and the second was allowed to go to full term The sarcoidosis in the second was apparently in a quiescent stage and was not affected by the pregnancy

The case presented here appears to be the first reported of a sarcoid patient with two full-term pregnancies, where, at least in the second pregnancy, the sarcoidosis appeared to be in an active stage

REPORT OF CASE

The patient then 20 years old, complained in September 1939, of ‘flashes in eyes” Examination disclosed iritis The white blood cell count was 6 950 and the differential count was normal with 1% eosinophils Chest x ray and tuberculin test

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1 Nardland M Ylvisaker R S Larson P and Reiff R. Pregnancy Complicated by Idiopathic Thrombocytopenic Purpura and *Sarcoid* Disease of the Spleen Splenectomy and Subsequent Normal Delivery Minnesota Med 29 166 1946

2 Longcope W T Personal communications to the author

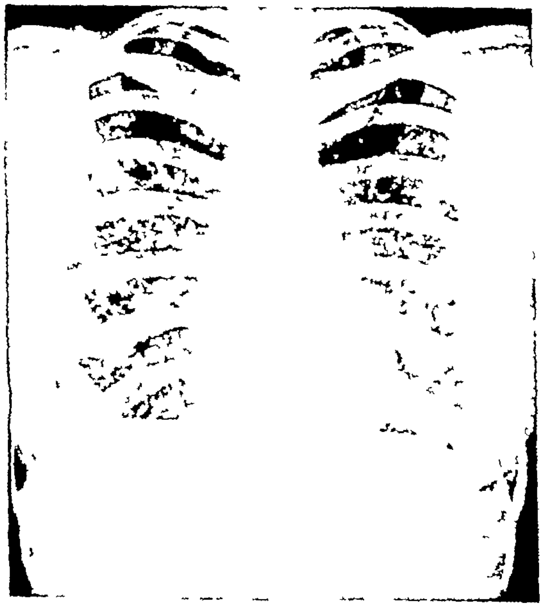
3 Harrell G T Generalized Sarcoidosis of Boeck Clinical Review *of 11* Cases with *Studies* of the Blood and Etiologic Factors Arch Int. Med 65 1003 (May) 1940

4 Russel K. P Sarcoidosis (Boeck s Sarcoid) and Pregnancy Bull Moore White Clin p *14 1950*

were negative The patient was referred for ophthalmological examination, and iritis and conjunctivitis of uncertain origin were reported In 1941 a chest x-ray taken elsewhere disclosed bilateral lung involvement, which was thought to be moniliasis Repeat films in 1942 1943 (Figure) and 1945 showed little change

In May, 1946, the patient had a child She consulted me in May, 1947, because of acute chest pain and cough Fine crepitant rales, scattered through both lungs were heard The spleen at this time was greatly enlarged Chest films showed little change from 1942 She was seen at Mayo Clinic in August, 1947, where the diagnosis of sarcoidosis was made and confirmed by inguinal gland biopsy In September, 1947, the spleen extended almost to the umbilicus and to the left anterior superior spine Dr Paul S Barker, professor of medicine at the University of Michigan Medical School, suggested that calciferol be tried in the dosage used in the University Hospital

In February, 1948, a month after calciferol was started, the patient was found to be over three months pregnant Decision to allow pregnancy to proceed was made with much concern, but the spleen receded, vomiting stopped, and pregnancy proceeded normally, with the patient subjectively well throughout By the eighth month of pregnancy the spleen was palpable only on deep inspiration Spleen percussion also showed the decreased size X-ray of the lungs remained unchanged In June, 1948 the total serum protein was 7 19 gm , with albumin 2 65 gm , and globulin 4 54 gm


Roentgenogram of chest taken in 1943 showing extensive infiltration of both lungs.

On Aug 12 1948, the day before her delivery the total serum protein was 4 98 gm , with albumin 3 16 gm and globulin 1 82 gm , a return to normal ratio The patient was delivered of a healthy 6 lb (2 7 kg) girl by Dr Albert E Catherwood, at Harper Hospital, Detroit The spleen soon after delivery was barely palpable after deep inspiration On the third day it was palpable without inspiration Soon after breast feeding was stopped, the patient began to again have cough and dyspnea She stated that the same order of events occurred in her first pregnancy A chronic cough disappeared soon after the start of that pregnancy, she was excellent during pregnancy and lactation but began to have symptoms afterward

In December, 1948, the spleen again reached almost to the umbilicus and to the left anterior superior spine The same month in her home she was in close contact with a worker who had advanced pulmonary tuberculosis In February, 1949, she became acutely ill with cough fever, and marked dyspnea No acid fast bacilli were found in the sputum The total serum protein was 6 gm with albumin 3 1 gm , and globulin 2 9 gm She complained of severe abdominal pain and diarrhea A moderate cough and morning sputum continued and there was a slight but constant, weight loss In June cyanosis of lips and fingertips appeared The cough and cyanosis were relieved only by oxygen On June 25, 1949, sputum showed acid fast bacilli A tuberculin test the next day showed a positive reaction Specimens the next two days were again positive The roentgen report by Dr Lawrence Reynolds on chest film of July 5 1949 was "The lesions of the chest at this time are of the miliary character and have every appearance of being changes incident to miliary tuberculosis

The patient s weight was now 85 lb (38 6 kg), instead of her normal 110 (49 9 kg) She was placed in the Detroit Tuberculosis Sanatorium and her symptoms abated under daily streptomycin therapy After four weeks moderate vertigo and mild urticaria appeared A change to dihydrostreptomycin did not ameliorate the vertigo and urticaria She was placed on a regimen of streptomycin, 1 gm every third day The vertigo disappeared Slight urticaria persisted Para-aminosalicylic acid, 9 gm daily, was added On Nov 21, 1949, the Robinson Power Kepler test was positive in both urine and blood, and seemed to support the clinical suspicion of Addison s disease The 24-hour urine assay showed diminished 17-ketosteroids, 3 8 mg suggesting adrenal involvement In February, 1950, the eosinophil test was done The white blood cells showed a drop from 5,300 to 5,050, and the circulating eosinophils from 80 per cubic millimeter to 25 per cubic millimeter after epinephrine This indicated normal adrenal cortex response The possibility of an intermittent Addison status was considered The patient s weight April 2, 1950, was 109 lb (49 4 kg) Spleen remained enlarged Sputa examinations on April 2 and April 20 were negative A chest film on April 28, 1950, showed a change from a miliary character to that of a bilateral fibrosis The patient's status and findings have remained the same to Sept 1, 1950

COMMENT

The most important feature in this case was the patient's excellent status, judged from the patient's own statement, during her first pregnancy, and improvement noted by me in her second pregnancy The improved clinical state and the reduction in spleen size to normal during the second pregnancy suggested a benefit from the pregnancy The reversed albumin-globulin ratio of the serum proteins, often found in sarcoidosis, became normal in the latter part of the pregnancy and also suggested improvement On the other hand, the lung infiltration did not change, and the tachycardia persisted The latter might possibly be due to sarcoid involvement of the heart, despite negative cardiac findings throughout

It has long been apparent that pregnancy exerts a neutral or favorable influence in many diseases The improvement in atrophic arthritis by compound E (17-Hydroxy-11-Dehydrocorticosterone)[5] suggests the benefits in pregnancy may be due to the increased elaboration of compound E or of hormones with similar effects The favorable effect of pregnancy on peptic ulcer has been considered as possibly due to hormonal factors[6] The favorable effect of pregnancy on some diabetic mothers may be due to insulin from the hypertrophied islets of the fetus In Addison's disease, pregnancy usually exerts an unfavorable effect When the patient improves during pregnancy, compensatory hypertrophy of the fetal adrenal cortex is postulated

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[5] Hench P S Kendall E C Slocumb C H and Polley H F The Effect of a Hormone of the Adrenal Cortex (17 Hydroxy 11 Dehydrocorticosterone Compound E and of [illegible] Adrenocorticotropic Hormone on Rheumatoid Arthritis Proc Staff Meet Mayo Clin 24:181 1949

[6] Sandweiss D J The Beneficial Effect of Pregnancy on Human Peptic Ulcer and the Beneficial Anti Ulcer Effect of the Pituitary Adrenal Complex on Experimental Ulcers A Possible Explanation Harper Hosp Bull 7 228 1949

[7] Gordon W H Fetal Hypoglycemia Due to Hyperinsulinism J Michigan M Soc 34 7 1935

The involvement of the lymphoid system in sarcoidosis makes it tempting to consider adrenal involvement as a possible cause of sarcoidosis The value of adrenal cortex factors in diminishing enlarged spleens and lymph glands in other diseases has been recently noted [8] Calciferol and dihydrotachysterol as therapeutic agents appear to be valuable in sarcoid therapy The close relation of these drugs to the adrenal and ovarian steroids seems significant In this case trial of corticotrophin (ACTH) was considered, but was delayed because of the tuberculosis

The possibility of coincidental temporary improvement in the sarcoidosis with the pregnancies and during lactation cannot be denied It is obvious that one must be wary of conclusions from a single case The fact, however, that improvement occurred in both pregnancies appears significant

CONCLUSIONS

A patient with sarcoidosis had two normal full-term pregnancies, with improvement in the sarcoid status during the pregnancies

The hormonal changes evoked by pregnancy may be a clue to the etiology and treatment of sarcoidosis

1304 David Broderick Tower

[8] Isaacs R Chronic Infectious Mononucleosis Blood 3 858 1948

TREATMENT OF SALMONELLA SEPTICEMIA WITH CHLORAMPHENICOL

James J Hines, M D , Chicago

This is a report of a case of Salmonella septicemia without gastrointestinal symptoms successfully treated with chloramphenicol (chloromycetin®)

REPORT OF A CASE

E L , a 27-yr -old Negro woman, entered the Central Free Dispensary of the Presbyterian Hospital on Aug 7 with complaints of severe parietal headache, sore throat pain in the low back, and cough of one week's duration In the week prior to her admission she suffered two episodes of severe shaking chills and high fever Her throat was sore, she could not swallow solid foods and she had been lethargic for a week No history of diarrhea or gastrointestinal upset was elicited, and the systemic review indicated essentially normal conditions except for pain in the chest when coughing This cough was productive of small amounts of yellowish sputum A diagnosis of chronic pelvic inflammatory disease was made in this clinic two years before her present admission

Physical examination revealed a small 27 yr -old Negro woman who appeared acutely ill Her temperature was 102 F and her pulse rate 120 and regular The abnormalities found were markedly reddened tonsils and pharynx, a soft systolic murmur over the entire precordium, tenderness in the lower abdomen, and tenderness and enlargement of the left Fallopian tube on pelvic examination

Laboratory Findings—The erythrocyte count was 3,890,000 with 12 gm of hemoglobin, and the leukocyte count was 3,500 of which 78% were polymorphonuclears and 22% lymphocytes The Kahn reaction was negative, and the urine examination findings were normal The blood sedimentation rate was 44 mm an hour (Wintrobe) Three successive negative stool cultures were reported Streptococci of the viridans group were recovered from a throat culture X-ray examination revealed no abnormalities in the heart or lungs, and the electrocardiogram was normal Cultures of blood drawn on the first, second, and third days of the patient's illness showed pure cultures of a gram negative bacillus which produced acid, gas, and hydrogen sulfide in Kligler's medium, no fermentation in Endo agar, and no fermentation in lactose and saccharose mediums and failed to liquefy gelatin or produce indole There was no agglutination by paratyphoid serums A or B In the Illinois State Department of Health Laboratory the organism proved to be salmonella Montevideo by slide agglutination with nonspecific antiserums Agglutinations with typhoid antiserums were negative Qualitative sensitivity tests revealed that chloramphenicol completely inhibited the growth of this organism There was no growth retardation by aureomycin streptomycin, penicillin, or sulfadiazine

Clinical Course—On the day of admission the patient was given 600 000 units of procaine penicillin G for aqueous infection (crysticillin®), which was continued for two days with no change in the temperature or the symptoms After blood cultures revealed S Montevideo infection, chloramphenicol was administered in doses of 250 mg every four hours after an initial dose of 1 gm Twenty four hours later the patient was afebrile and her symptoms subsided The systolic murmur heard on admission was softer The chloramphenicol was continued for four days with a total dose of 6 gm Two weeks following cessation of treatment the patient was afebrile and asymptomatic Repeated blood and stool cultures were negative

COMMENT

It is interesting to note the striking similarity of the infection in this case to Salmonella suipestifer infection Harvey [1] in 1937 reviewed the literature of S suipestifer and reported 21 new cases He stated that in the majority of his cases there was an uncomplicated bacteremia simulating typhoid He found that the organism was readily cultured from the blood but rarely from the stools Forty-four of the 71 cases that he reported or reviewed were without localizing signs of infection Goulder, Kingsland, and Janeway [2] reported 11 cases of S suipestifer with one case of endocarditis due to this organism Their cases also showed a typhoidlike infection without localizing signs of infection

S Montevideo was first isolated in Uruguay from lymph nodes of healthy swine and later from infants with summer diarrhea by Hormaeche and others [3] They found the organism to be from the VI and VII groups, with flagellar antigens related to those of S enteritidis and S Senftenberg, without being identical with either of them

This organism also has been found in the stools of chicks and human beings [4] The greatest animal reservoir of S Montevideo is probably in domestic fowl [4]

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[1] Harvey A M Salmonella Suipestifer Infection in Human Beings Review of Literature and Report of 21 New Cases Arch Int Med. 59 118 (Jan) 1937

[2] Goulder N E Kingsland M F and Janeway C A Salmonella Suipestifer Infection in Boston New England J Med 226: 127 (Jan. 22) 1942

[3] Hormaeche E and Salsamendi K. Sobre la prescencia de salmonellas en los ganglios mesentéricos de cerdos normales Arch urug. de med cir y especialid 9 665 (Dec.) 1936 Hormaeche E. Peluffo C A and Aleppo P I in Report of Proceedings, Third International Congress for Microbiology 1939 New York International Association of Microbiologists 1940 p 631 Hormaeche E. and Peluffo C A S Montevideo Nuevo tipo de Salmonella encontrado en el Uruguay Arch urug de Med cir y especialid 9 673 (Dec) 1936

[4] Jungherr E and Clancy C. F Serologic Types of Salmonella Isolated from Paratyphoid in Chicks J Infect. Dis 64 1 (Jan Feb)

Edwards and Bruner[5] have found it in 17 out of 325 food-poisoning outbreaks in man in the United States between 1934 and 1941

An epidemic of S Montevideo food infection was reported in 1944 by Myers and Eckles[6] In this epidemic 975 men became ill with fever, diarrhea, nausea, vomiting, and headache None of these patients died, and most of them were discharged after 96 hr with few or no symptoms

In the period from April, 1939, to the close of 1945 about 2,000 Salmonella infections were identified by the New York Salmonella Center[7] Cultures came from many parts of the United States and some adjoining territories Of these 2,000 cases of Salmonella infection, 134 proved to be due to S Montevideo In the literature of the established cases of S Montevideo no case has been reported in which a septicemia occurred without gastrointestinal symptoms

Because of the associated murmur there is an unproved possibility that this case is one of Salmonella endocarditis A case of this disease caused by S Minnesota with no demonstrable primary focus was reported by Kurz, Crehan, and Thomson[8] In that case no improvement was effected by sulfadiazine, penicillin, or streptomycin, and the patient died

This case demonstrated dramatic clinical response to chloramphenicol therapy, and a qualitative sensitivity test showed that growth of the organism was completely inhibited by this drug and not by other antibiotics

Chloramphenicol has been employed successfully by Ross and others[9] in the treatment of S enteritis, but none of their cases was complicated by septicemia

Although there is no established link, two possible foci of infection are suggested, namely, the pharyngeal and pelvic infections The pharyngeal infection was a prominent part of the clinical picture, but the culture revealed only streptococci of the viridans group Infection from a pelvic focus not infrequently is due to the Salmonella group, and there is evidence here of chronic inflammatory disease of long standing However, there is no proof of a bacteriologic relationship in this case There is also no evidence of a focus in the intestine

SUMMARY

An instance of S Montevideo septicemia without gastrointestinal symptoms successfully treated with chloramphenicol is described, the similarity of this case to cases of S suipestifer infection is suggested, and the characteristics, incidence, and bacteriology of the organism are discussed

1753 W Congress St

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[5] Edwards P R and Bruner D W Occurrence and Distribution of Salmonella Types in the United States J Infect Dis. 72 58 (Jan Feb) 1944

[6] Myers W A and Eckles L. E Epidemic of Food Infection Caused by Salmonella Montevideo U S Nav M Bull 43: 1067 (Nov) 1944

[7] Seligman E. Saphra I and Wasserman M Salmonella Infections in the U S A Second Series of 2000 Human Infections Recorded by N Y Salmonella Center J Immunol 53: 69 (Sept) 1946

[8] Kurz, E. Crehan E and Thomson C Salmonella Endocarditis with Streptomycin Failure Ann. Int. Med 31 497 (Sept) 1949

[9] Ross S and others Chloromycetin in the Treatment of Salmonella Enteritis New England J Med 242: 173 (Feb 2) 1950

USE OF CHLORAMPHENICOL AND TYPHOID VACCINE IN INFANT BORN OF TYPHOID CARRIER

Irving Mond, M D , Beacon, N Y

In the course of routine epidemiological studies made since 1934 on all food handlers, professional personnel, and patients in the obstetric and pediatric services of the Bronx hospital,[1] the staff was recently confronted with the problem of a newborn child delivered by a previously undiscovered typhoid carrier This case report is concerned with bacteriologic and serologic studies of mother and infant and with the prophylactic use of chloramphenicol and vaccination for protection of the baby

REPORT OF CASE

M A , a 25 yr -old nullipara, was admitted to the antepartum clinic on June 9, 1949 Her last menstrual period was on Jan 20, 1949 The patient had been in a German concentration camp and had experienced recurrent episodes of cholecystitis during the period 1946-1948 Her prenatal care progressed normally and she was admitted to the Bronx Hospital on Nov 7 1949, in active labor At 1 05 p m she gave birth spontaneously to a living male child Routine stool examination done on admission, Nov 9, 1949, was reported positive for Salmonella typhosa, and mother and child were isolated Agglutination tests for the mother done on Nov 10 were positive for Salmonella typhosa H antigen in a dilution of 1 10 and for Vi antigen in a dilution of 1 16 Confirmatory fecal studies were made at Bronx Hospital on Nov 15 and Nov 18 and several times by the New York City Department of Health Aspirated duodenal contents also revealed S typhosa in great numbers, indicating the gall bladder or hepatic ducts as the reservoir of infection The patient had no physical complaints, and her postpartum convalescence was uneventful

The male infant was admitted to the nursery on the day of delivery in good physical condition and was transferred to the isolation ward two days later when the positive fecal culture of its mother was revealed On Nov 10 the agglutination tests for S typhosa O and H antigen were negative, the blood count was as follows hemoglobin 16 2 gm , erythrocytes 5,000,000 per cubic millimeter, leukocytes, 6,000 per cubic millimeter, with a differential of lymphocytes 75%, segmented forms 18%, eosinophils 2%, and monocytes 5% Fecal cultures from Nov 10 through Nov 18 were negative for Salmonella and Shigella organisms A blood culture on Nov 21 proved sterile and a blood count on the same day was normal On the third hospital day, Nov 9, 1949, the child began to receive chloramphenicol, 250 mg per day On Nov 14 six days later administration of the antibiotic was discontinued because of anorexia After this, the child did well and was discharged on Nov 22, 1949

On Dec 1, 1949, the infant was readmitted for immunization Physical examination revealed no abnormality Routine urinalysis elicited negative findings Blood agglutination studies for typhoid were negative Subsequent numerous fecal cultures for Eberthella typhi made over the period from Dec 2, 1949 to April 1 1950, were all negative The Wassermann and Kahn tests were negative

On Dec 2 1949 the patient received 50 000 000 organisms of a stock monovalent typhoid vaccine of wide antigenic pattern A second dose of 100 000,000 was administered on Dec 16 a third

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From the Departments of Laboratories, Obstetrics and Pediatrics Bronx Hospital New York

Dr A J Weil Bacteriologist supplied help and advice in the bacteriologic and serologic examinations These studies were made possible by the permission of Drs M Rosensohn Director of Obstetrics A C Posner Attending Obstetrician and J Lapin Attending Pediatrician

[1] Felsen J and Wolarsky W The Hospital [illegible] Hospitals 14 41 (Aug) 1940

dose of 150,000,000 was given on Dec 23, and a fourth of 200,000,000 on Dec 30 No reactions occurred, and the infant was discharged for follow-up in the outpatient department

On Jan 6, 1950, the infant received 250,000,000 organisms, resulting in a reaction characterized by fever, anorexia, and irritability Immunization was discontinued Repeat blood agglutination titers for typhoid O and H antibodies on Jan 23 and April 1, 1950, were entirely negative Frequent physical examinations of the infant during this period revealed an occasionally, not persistently, palpable spleen, but no other abnormality

COMMENT

In an evaluation of the prophylactic use of chloramphenicol and the serologic implications of these studies, certain known facts had to be borne in mind For example, there is no evidence that there is any transplacental transmission of protective antibodies against Salmonella or Shigella infection from mother to infant[2] Indeed, the newborn are very susceptible to these infections, and the mortality rate is high[3] The chances of the infant's being infected are also high, since the fetal head crosses the perineum, which is often soiled by intestinal contents of the mother In some cases the obstetrician may transmit the infection by means of his soiled gloves In either case it is an "intestine to mouth" infection In this case, the absence of typhoid organisms in the blood of the newborn was ascertained, hematogenous dissemination through the placenta had not occurred

Chloramphenicol is transmitted through the placenta from mother to infant without toxic manifestations[4] It therefore appears feasible, when the mother is known to be a typhoid carrier, to administer chloramphenicol before term, for the protection of the fetus

The effects of active immunization could not be proved by our serologic studies, since demonstrable protective or other antibodies are not readily elicited in the newborn

On the basis of these studies, we can conclude only that an infant born of a typhoid carrier had every chance of becoming infected but did not do so, possibly because of the prophylactic use of chloramphenicol and active immunization The mother has been urged to undergo cholecystectomy on the supposition that the gall bladder may be the sole repository for her residual infection and, more particularly, since the positive fecal cultures have persisted in spite of chloramphenicol therapy The question naturally arises at this point, if the organism is resistant to chloramphenicol therapy in the mother, how could the same antibiotic be effective in the infant? It is possible that the drug may be more effective when used before mass infection has occurred

SUMMARY

A case is presented of an infant born of a mother who proved to be a typhoid carrier Prophylactic use of chloramphenicol and active immunization in the infant and associated serologic studies are described

16 Church Street

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[2] Felsen J Bacillary Dysentery Colitis and Enteritis Philadelphia W B Saunders Company 1945

[3] Felsen, J in Pediatric Progress, edited by H R. Litchfield and L. H Dembo Philadelphia F A Davis Company 1948 Dysenteries and Salmonella Infections, chap 2, pp 103 159

[4] Scott W C and Warner R F Placental Transfer of Chloramphenicol (Chloromycetin®) J A M A **142**: 1331 (April 29) 1950

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ASPECTS OF ARTIFICIAL INSEMINATION

There is little that can be said with any degree of assurance concerning the medicolegal aspects of artificial insemination for such aspects have not been explored satisfactorily by any court of appellate jurisdiction in the United States Yet, the procedure is no longer novel It was reported (*J A M A* **116** 2747 [June 21] 1941) that by 1941 almost 10 000 pregnancies had occurred in the United States as a result of this procedure Physicians and lawyers alike seek answers to the many questions that may arise concerning a situation not known to the common law and not now covered by specific statutory provisions questions relative to legitimacy, to inheritance, and to liability in connection with the selection of donors, among others

PHYSICIAN S LEGAL RESPONSIBILITY

If the donor is the husband of the woman inseminated artificially, the application of the ordinary laws relating to malpractice will probably be sufficient to protect the rights of all parties The child, if one results, will unquestionably be legitimate, and, if the physician exercises due diligence, uses ordinary knowledge and skill and his best judgment, and respects the confidence of his patient, he will not be liable for damages even though the resulting baby be defective What constitutes due diligence, ordinary knowledge and skill will depend on the accepted practice at the time in the community in which the artificial insemination is performed or in a similar community among physicians engaged in or holding themselves out as ready to engage in the artificial insemination of would be mothers

When the physician uses semen from a donor other than the husband, there is a possibility that complications may arise In such cases the law must be applied to a novel situation, but certainly the physician assumes a certain degree of responsibility as to the suitability of the donor In selecting a donor, or in passing judgment on the fitness of a donor offered by a woman who wishes to be artificially impregnated, or by her husband, the physician assumes responsibility the nature and limits of which have not been determined by statutory law or defined by the courts

What the law requires of him in the way of investigation of the suitability of a prospective donor, from the standpoint of heredity and present phyiscal condition, and how far he will be held liable for errors of judgment in vouching for the fitness of the proposed donor, no one can say with any degree of certainty

How far the courts will recognize a right on the part of a woman who is to be inseminated and of her husband, to assume by express contract the risks of unsatisfactory results due to the unfitness of the donor is impossible to say A patient may by express agreement relieve a physician of some of the obligations imposed on him by the usual implied contract for medical services but not all of such obligations How far the law will permit a woman or her husband to assume the risks of the fitness of a donor, which is a matter that is or should be peculiarly within the knowledge of the physician, is uncertain

ADULTERY—LEGITIMACY

Because criminal statutes are strictly construed it is doubted by some that a medical procedure such as this, performed privately with the consent of all concerned, violates statutes relating to adultery or rape In support of this view it is pointed out that statutes concerning adultery use phrases such as "if any man and woman shall live together in an *open* state of adultery" or the words open,' 'notorious, cohabit or the like. In this procedure there is no cohabitation between man and woman not married to each other and there is no openness or notoriety associated with it There is no carnal knowledge of a woman as that term is used in law The procedure a medical one designed to cause conception, lacks the elements of lust, passion or force There is an absence of a physical, sexual relationship between man and woman It is also pointed out that statutes relating to adultery and rape apply to natural physical acts whereas this procedure as its name acknowledges is artificial

Others believe that the operation does constitute adultery It is said that a child which results from heterologous artificial insemination is conceived outside of the marriage relation and is not the child of a wife and her husband It is further stated that this procedure is unlawful as against public policy and that consent to such unlawful act can not be valid nor can it make the act lawful

A child born in lawful wedlock is presumed to be legitimate Because a child conceived as the result of a heterologous artificial insemination of a married woman with the consent of her husband is born in lawful wedlock, one school of thought believes that the child so conceived should be considered and is legitimate This group reasons that consent by both husband and wife to the procedure is a valid exercise of a right incident to the marriage relationship to accomplish one of the ends of marriage It is also reasoned that because there is no express prohibition in law against this procedure the resulting child is legitimate. This group does not make clear what the status of a child would be were it conceived in the absence of the husband s consent, although it is implied that it would be illegitimate

Another school of thought holds that the procedure is unlawful in itself because it is artificial and contrary to nature and thus against public policy This group believes that the child is unlawfully conceived and therefore is not legitimate This group advocates that adoption proceedings be completed to protect the rights of a child so conceived or that statutes relating to the procedure itself and to the rights of the child be adopted

In civil law it may well be doubted that a child so conceived even with consent, would satisfy a requirement of will or deed requiring for its execution lawful issue of his body or "heirs of his blood" It may be questioned whether such issue is the grandchild of the paternal grandparents

COURT CASES

In a Canadian case decided in 1921, *Orford v Orford 49 Ontario Law Reports 15* there was involved an alleged case of artificial insemination, performed in England on a woman whose husband was in Toronto Canada While the question was not definitely determined by the court it was strongly intimated that a woman who submits to an artificial insemination without the consent of her husband, the donor being a man other than her husband commits adultery The court in its dicta described adultery as the voluntary surrender to another person of the reproductive powers or faculties of the guilty person"

Another case arose in New York in 1947 *Strnad v Strnad 78 N Y S (2d) 390* The court had granted a decree of separation to a wife and in that decree authorized the husband to have custody over the weekends of a child born to the wife The wife subsequently asked the court to amend the decree on the ground that the child resulted from an artificial insemination, the donor being a person other than the husband and therefore the husband was not the father of the child In the written opinion of the Supreme Court of New York County, New York it was said

> The court has assumed for the purpose of this litigation in the light of the record and the concessions made by the defendant that the plaintiff was artificially inseminated with the consent of the defendant and that the child is not of the blood of the defendant Predicated on that assumption the court concludes as follows
>
> "(1)
>
> (2) The court holds that the child has been potentially adopted or semi adopted by the defendant In any event in so far as this defendant is concerned and with particular reference to visitation, he is entitled to the same rights as those acquired by a foster parent who has formally adopted a child if not the same rights as those to which a natural parent under the circumstances would be entitled
>
> "(3) In the opinion of this court assuming again that the plaintiff was artificially inseminated with the consent of the defendant the child is not an illegitimate child Indeed logically and realistically the situation is no different from that of a child born out of wedlock who by law is made legitimate upon the marriage of the interested parties
>
> (4) The court does not pass on the legal consequences in so far as property rights are concerned nor does the court express an opinion on the propriety of procreation by the medium of artificial insemination "

In an English case *L v L* [1949] *1 All E R 141* decided Nov 30, 1948 (Probate Divorce and Admiralty Division) a decree of nullity was granted to a wife on the ground of her husband s incapacity to consummate the marriage although the wife had borne a child after having been artificially inseminated with her husband s semen Evidence established that the husband was psychologically unable to have normal sexual relations with his wife It was further established that he had consented to the artificial insemination to satisfy his wife s desire for a child and her hope that normal relations might be established Although the marriage was set aside as null and void and the child held to be illegitimate this case can only be taken as authority for the principle that the artificial insemination of a wife with her husband s semen normal intercourse being impossible, did not, under English law, consummate a marriage

LEGISLATION

No legislation has been enacted in any of the states which deals specifically with the several aspects of artificial insemination Since 1948 however, bills have been introduced in the legislatures of five states dealing with the rights of a child born following an artificial insemination

A New York bill (S 745) provided as follows

> A child born to a married woman by means of artificial insemination with the express or implied consent of her husband shall be deemed the legitimate natural child of both the husband and his wife for all purposes and such husband and wife and such child shall sustain toward each other the legal relation of parent and child and shall have all the rights and be subject to all the duties of that relationship including the rights of inheritance from each other

This bill failed of enactment Another bill (S 587) containing the provision similar to the quotation plus a further provision that consents for this procedure should be filed with the county clerk was introduced in the New York Senate in 1950 It, too failed of enactment

A proposal (S 199) was submitted in 1948 to the Virginia legislature This bill which was not enacted provided simply the children born as a result of artificial insemination should be considered the same as legitimate children for all purposes if the husband of the mother consented to the operation

In 1949 bills were introduced in Wisconsin (Assembly Bill 407) Indiana (H B 350) and Minnesota (H B 1090 1091 1092 and S B 1108 1109 and 1110) None was enacted into law The Wisconsin and Indiana bills declared a child so conceived to be legitimate and to have full rights of inheritance In addition the Indiana bill provided that the physician and the mother of the child should retain copies of consent to the procedures while the Wisconsin bill provided that such consent would have to be filed with the registrar of probate In Minnesota three bills were introduced in the House and three companion bills were introduced in the Senate One pair provided that artificial insemination was unlawful but that children so conceived were legitimate another provided that artificial insemination was lawful if the husband s semen alone was used, and the other provided that artificial insemination was a lawful procedure Provisions regulating and controlling the performance of the operation were established mother and donor would have to be free of a disease affliction or imperfection likely to be communicated to or inherited by the child the doctor must be of the opinion that the donor resembles husband in physique, appearance and temperament and that donor s and donee s blood are compatible donors may not be nearer in kin to the donee than second cousins

The Sanitary Code of the City of New York was amended effective July 1 1947, to impose certain restrictions on the use of donors for artificial insemination This amendment and the regulations issued pursuant to it, required among other things, that a donor be given a complete physical examination that donors found to be suffering from specific conditions may not be used that the blood of the donor and donee be typed with respect to the Rh factor and that the physician performing the operation prepare records showing compliance with these requirements

MEDICOLEGAL ARTICLES

There have been a number of articles written on the medicolegal aspects of this procedure Reference to them with brief description of their content follows

Abel, S The Present Status of Artificial Insemination, Surgery, Gynecology and Obstetrics, December, 1947 (Surgical Publishing Co 54 E Erie St, Chicago) Dr Abel, of the Department of Obstetrics and Gynecology at Northwestern University Medical School, discussed not only the legal aspects of artificial insemination but also its theological aspects and includes a suggested draft of a law dealing with the legitimacy of the issue of children so conceived

Tucker, F B Legal Problems of Artificial Insemination, Woman Lawyers Journal, Spring, 1947 (National Association of Women Lawyers, 80 Federal St, Boston 10) Miss Tucker, of the Chicago, Illinois, Bar, discusses the physician s duties and responsibilities in artificially inseminating a married woman, points out legal pitfalls to be wary of, and comments on the need for legislation covering this subject

Seymour F I, and Koerner, Alfred Medicolegal Aspects of Artificial Insemination J A M A **107** *1531 (Nov 7) 1936* (American Medical Association, 535 No Dearborn St, Chicago 10, Illinois) Drs Seymour and Koerner discuss the legal unknowns in the subject of artificial insemination and emphasize the responsibility of the physician not only in the creation of the child but in its future welfare, particularly in its adjustment to its own family unit'

Seymour F I, and Koerner, A Artificial Insemination, Present Status in the United States as Shown by a Recent Survey, J A M A **116** *2747 (June 21) 1941* The authors analyze the means and results of artificial inseminations resulting in 9,489 pregnancies, 97 per cent of which resulted in the birth of live babies While the article is statistical and entirely medical, it may be of interest to lawyers and legislators who desire to compare the percentage of medical complications arising from artificial insemination with those occurring in natural pregnancies

Greenhill, J P, and Wright, J F Artificial Insemination Its Medicolegal Implications, A Symposium American Practitioner, January 1947 (Also found in 'Symposium on Medico legal Problems' Ed S A Levinson, Published by J B Lippincott Philadelphia, in 1948) Dr Greenhill, Professor of Gynecology at Cook County Post-Graduate School and Mr Wright of the Chicago, Illinois, Bar Association presented talks concerning both the medical and legal history and medical and legal problems of artificial insemination at a meeting of physicians and lawyers under the co-sponsorship of the Institute of Medicine of Chicago and the Chicago Bar Association A transcript of the discussion afterwards contains questions of practical interest posed by medical and legal practitioners The answers emphasize practical medical and legal problems, and suggest various solutions

Foreign Letters, Paris, Artificial Insemination J A M A **135** *729 (Nov 15) 1947* This letter from THE JOURNAL'S Paris correspondent summarizes briefly the views of French doctors, lawyers and theologians concerning artificial insemination

Queries and Minor Notes, J A M A **110** *1857 (May 28) 1938* The answer to a query concerning the practicability of artificial insemination calls attention to possible social, legal and certain physiologic dangers which should be considered by the physician contemplating this operation

Seashore, R T Artificial Impregnation, Minnesota Medicine, pp 641-644, Sept 1938 (Minnesota Medicine, 2642 University Ave, St Paul 4, Minnesota) The author in presenting a case discusses the legal aspects of this operation as it actually occurred to him, a physician, and his attorney The article contains a form of consent, outlines procedure for its use and makes a recommendation as to custody of the consent forms

Guttmacher, A F Role of Artificial Insemination in the Treatment of Sterility J A M A **120** *442 (Oct 10) 1942* Dr Guttmacher in discussing the social aspects of artificial insemination, having discussed the medical aspects, sets forth four rules described as common sense rules to be followed by the doctor in any case of contemplated artificial insemination

Haman J O Artificial Insemination California Medicine, pp 353-357, May, 1948 (California Medical Association, 450 Sutter St, San Francisco 8, California) The author presents a form of consent the use of which by the couple is advocated chiefly as protection for the physician The author calls attention to the fact that the type of legislation which may be enacted will depend upon the care or lack of care by physicians in performing this operation concluding that lack of care and integrity by physicians will arouse public opinion and engender legislation banning this practice

Forbes, R The Medico-Legal Aspects of Artificial Insemination, The Medico Legal and Criminological Review **12** *138 (July-Sept) 1944* (The Medical Defense Union, 49 Bedford Square, London, W C I, England) The principal part of this article, read by Dr Forbes, Secretary of the Medical Defense Union of England, before the Medico-Legal and Criminological Society, develops the history and medical aspects and the legal pitfalls of artificial insemination The reported comments of the doctors and lawyers of the audience offer varied observations as to the practice and some pertinent suggestions relative to legal problems involved

Comment (Author not named) Artificial Insemination A Parvenu Intrudes on Ancient Law, The Yale Law Journal, **48** *457 (Feb) 1949* (Yale Law Journal Co, 127 Wall St, New Haven, Conn) This article develops the thesis that because the operation of heterologous insemination, AID, was unknown and unthought of while laws developed legislatively and judicially the legal problems which may obtain by reason of the operation cannot be answered by reference to the law as it stands The article concludes that legislative decision is the only ultimate solution to the legal questions involved and discusses briefly principles, legal and social, which in the writer's opinion should be considered to achieve sound legislation

The Report of a Commission Appointed by His Grace The Archbishop of Canterbury, Artificial Human Insemination, (Feb) 1948 (Printed by The Talbot Press, SPCK, Saffron Walden, Essex, England)

Artificial Insemination—Illegitimacy (Editorial), J A M A **112** *1832 (May 6) 1939* This editorial suggests that a child born after an artificial insemination, the donor being a person other than the husband of the woman inseminated, must be considered as illegitimate and adoption proceedings are advocated

J G P Artificial Insemination v Adoption, Virginia Law Review, October, 1948 (Virginia Law Review Association, Charlottesville, Virginia) The author expresses his opinion that heterologous artificial insemination is contrary to law and suggests that couples who are incapable of having children resort to adoption procedures rather than this operation

Artificial Insemination (Editorial) The Journal of the Indiana State Medical Association, July 1950 (1017 Hume Mansur Bldg, Indianapolis 4) This editorial expresses doubt that the procedure violates any criminal law and suggests that when consent to the operation is obtained from the husband authorizing the insemination of his wife with the semen of a donor, the child, if one results, is legitimate

Russel, M A Plea for Standardization of Donors, J A M A **144** *461 (Oct 7) 1950* The author states that a doctor in performing this procedure should carefully investigate the background of the donor as well as examine him physically and lists the qualifications which, in his opinion, should be sought in donors

Artificial Insemination (Abstracts of Papers), The Medico Legal Journal, Part One, 1950 (The Medico-Legal Society, 125, High Holborn, London, W C I) Papers presented to the Manchester branch of the Society and discussion following their presentation are abstracted Legitimacy of issue, the legality of the operation, and the question of whether the procedure is adultery were ably considered

Problems of Artificial Insemination (Editorial), New York State Journal of Medicine, March 15, 1948 (Medical Society of the State of New York, 292 Madison Avenue, New York 17, New York) This editorial discusses the *Strnad* case as it points up problems connected with artificial insemination

Artificial Insemination (Editorial) British Medical Journal, May 3 1947 (British Medical Association, Tavistock Square, London, W C I) The view is expressed that heterologous artificial insemination may be adulterous and the resulting child illegitimate It is suggested that the doctor who engages in this practice, though not guilty of a criminal offense, stands on insecure ground and close to dangerous pitfalls

Regan L J Doctor and Patient and the Law ed 2 C V Mosby Company, St Louis, 1949

Schatkin, S B Disputed Paternity Proceedings ed 2, Matthew Bender Company, New York City, 1947

Dr Regan's book considers the several aspects of artificial insemination He includes a suggested form of consent to be used by the parties who undergo this procedure In Mr Schatkin s book the question of legitimacy is discussed

FORM OF CONSENT

The following form has been suggested for use in artificial insemination cases [1]

CONSENT TO ARTIFICIAL INSEMINATION

WHEREAS We the undersigned and are husband and wife having been married in the City of County of State of and

WHEREAS this marriage has to the present time been childless and

WHEREAS we are desirous of having a child and have been informed that is incapable of procreation

NOW THEREFORE we and each of us do hereby request and authorize Dr to select a donor who in his sole discretion and judgment will meet the following qualifications

We and each of us further request and authorize the said Dr to obtain from said donor sperm necessary to inseminate the said and to thereupon artificially inseminate her with said sperm in the usual and customary manner and to do such acts in furtherance thereof as may seem necessary and advisable in the sole discretion of Dr

We and each of us understand that said Dr does not warrant or guarantee the qualifications of said donor and that in determining whether the said donor meets the aforesaid qualifications the said Dr shall be required to make only such investigation of and concerning such donor as shall in the sole discretion of said Dr seem reasonably necessary

We and each of us further agree that we shall not now nor at any future time require nor expect said Dr to obtain or divulge to us the name of said donor nor any other information concerning said donor s race nationality characteristics qualities or any other information whatsoever concerning said donor

We further agree that following the said insemination the said Dr shall destroy all information and records which he may have as to the identity of said donor it being the intention of all parties that the identity of said donor shall be and forever remain anonymous

We and each of us further covenant and agree to forever refrain from instituting, pressing or in any way aiding any claim demand action or cause of action for damages costs loss of services expense or compensation for or on account of or hereafter arising out of the premises hereinabove set forth

We and each of us further promise and agree to indemnify and save harmless the said Dr from any loss and/or expenses incurred by him in connection with the defense or payment of any claim or action arising out of the aforesaid premises or agreements herein contained

This agreement shall be binding upon ourselves and each of us our assigns heirs, executors and administrators

Dated this day of 19

(Husband)

(Wife)

WITNESSES

Relying upon the authorization and agreements above set forth I hereby agree to obtain a donor and to artificially inseminate the said

DATED this day of , 19

CONCLUSION

Distinct difference of opinion exists concerning the legality of heterologous artificial insemination and the legitimacy of children resulting therefrom Reconciliation of these opposite points of view is difficult The extent of a physician s responsibility in selecting a donor and performing this operation if it is performed, is uncertain

A physician before undertaking the procedure will act wisely if he advises the husband and wife as to the legal implications or uncertainties of the operation as it affects them as husband and wife and as it may affect the child s status at law

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[1] Regan L J Doctor and Patient and the Law St. Louis C V Mosby Company 1949

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

The Council has authorized publication of the following report to the Council submitted by Arthur M Walker M D Secretary of the Veterans Administration Committee on Streptomycin

R T STORMONT, M D *Secretary*

CHEMOTHERAPY OF TUBERCULOSIS IN MAN

PRESENT STATUS

This paper is essentially a progress report of the clinical study initiated by the Veterans Administration Army and Navy in June, 1946, and is a continuation of three reports published previously in these columns [1] The most recent of the three described the situation as it existed at the time of the Eighth Streptomycin Conference in November 1949 The present article carries the account forward to the Tenth Conference on the Chemotherapy of Tuberculosis in January 1951 During this interval the number of cases reported to the study has increased from 7 000 to approximately 10,000, the goal of recording data from individual cases on punch cards has, in some measure been achieved thus increasing the reliability of the data certain disadvantages of streptomycin have been partially overcome and the effects of some new chemotherapeutic agents have been explored in a preliminary fashion Hence this report Although it concerns itself primarily with the results of a single cooperative study the conclusions this report presents are believed to be compatible with those of the majority of the other investigators in the field

From the outset it has been unpleasantly clear that streptomycin does not "cure tuberculosis [2] Since the disease occurs in many forms and is chronic by nature perhaps this was not to be expected Although some patients with miliary or meningeal tuberculosis are alive who otherwise would be dead, and a large number of muco-cutaneous lesions have healed [1b] which, otherwise, scarcely would have done so, the central problem, a cure for pulmonary tuberculosis remains The aim of the investigation has been to extract the greatest possible benefit from the drugs at hand by overcoming their disadvantages and by employing them in combination with bed rest and appropriate surgical procedures If the infrequency with which streptomycin cures tuberculosis is disregarded for the moment two disadvantages remain the drug s toxicity, and the frequency with which strains of tubercle bacilli resistant to it appear during treatment Since the two difficulties apply to the reduction product, dihydrostreptomycin, as well as to the parent drug both antibiotics will be considered simultaneously in these respects

TOXICITY

The obvious way to diminish or avoid the toxic effects of a drug is to decrease its dosage To this truism however must be added another if the diminution in toxicity involves a concomitant reduction in therapeutic efficacy, the investigator must weigh the advantages of the one result against the disadvantages of the other Fortunately, this dilemma can be avoided for the most part in the present instance

Remarks on the toxicity of the two antibiotics under discussion can be confined, for all practical purposes, to their effect

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Prepared by the Veterans Administration Washington D C at the request of the Tenth Veterans Administration Army Navy Conference on the Chemotherapy of Tuberculosis Atlanta Ga Jan 25 28 1951

[1] Reports to the Council on Pharmacy and Chemistry (*a*) The Effects of Streptomycin on Tuberculosis in Man J A M A **135** 634 (Nov 8) 1947 (*b*) Streptomycin in the Treatment of Tuberculosis Current Status ibid **138** 584 (Oct. 23) 1948 (*c*) Current Status of the Chemotherapy of Tuberculosis in Man A Summary Report ibid **142** 650 (March 4) 1950

[2] Hinshaw H C and Feldman W H Streptomycin in Treatment of Clinical Tuberculosis Preliminary Report Proc Staff Meet. Mayo Clin **20** 313 1945

upon the eighth cranial nerve Signs of renal irritation, skin eruptions, and fever occur occasionally in patients, and allergic phenomena may develop in nurses who handle the drugs, but both drugs are relatively non toxic except for their singular action on the vestibular and auditory apparatus Vertigo, accompanied usually by ataxia and by diminished response to caloric stimulation is the commonest toxic manifestation of streptomycin therapy It occurred, sometimes to an incapacitating extent, in 80% of 671 patients receiving 2 gm of the drug daily for 120 days [1b] Cutting down duration of treatment to 60 days reduced the incidence to 63%, but a reduction in dosage was even more successful Vertigo occurred in only 8% of 1,006 patients receiving a single daily injection of 1 gm per day, in 5 8% of 137 patients receiving 0 5 gm per day, and in 3 4% of 383 patients receiving 1gm twice a week (Table 13 [3a]) Each of these three regimens was continued for 120 days and in only two instances the vertigo was described as 'severe" or "incapacitating " Further—a point which will be discussed subsequently—these reductions in dosage were accomplished without any detectible loss of therapeutic efficacy This statement is made with reservations only for the 0 5 gm per day regimen

A second method of decreasing the incidence of vertigo, which began in the fall of 1948, involves substituting dihydrostreptomycin for streptomycin The advantage is very much in favor of dihydrostreptomycin at a dosage level of 2 gm per day [1b, c], but, since the study had already reached the conclusion that the daily dose of streptomycin need not exceed 1 gm per day, the advantage is more apparent than real At the lower dosage level, the difference is relatively slight (8% as opposed to 3%) [3b] For this reason and because, after a study of 800 cases, the advantage in therapeutic efficacy seemed to favor use of streptomycin the use of dihydrostreptomycin has been discontinued in the study Another factor which led to this decision was the discovery that dihydrostreptomycin was more prone to produce deafness which can occur even at a dosage of 1 gm per day if treatment be continued for longer than four months [4] According to Romansky [3b] and Glorig [3c] a loss of hearing exceeding 30 decibels occurred in 40% of 83 patients receiving 2 gm per day for less than four months This toxic reaction, as amazing in its specificity as the vertigo produced by streptomycin, is possessed to an even greater degree by hydroxystreptomycin (Hawkins [3c])

Some progress has been made, then, in controlling the toxic effects of streptomycin on the eighth cranial nerve by diminishing the amount and frequency of its administration, the most satisfactory regimen being 1 gm twice a week

DRUG RESISTANCE

The second disadvantage of streptomycin therapy is the frequency with which cultures of tubercle bacilli, obtained from patients, become inured to the drug and are able to grow in considerable concentrations of it It has been natural and reasonable to interpret this situation as indicating that all the tubercle bacilli in the patient s lungs (or eleswhere) are similarly resistant and that further treatment with streptomycin is useless This does not appear to be entirely true in man when the bacilli are resistant to 10 γ per cubic centimeter or even when they are partially resistant (i e, show less growth than in the control tube) to 100 γ per cubic centimeter (Table 1c [3c]) It is true however, in man when the bacilli are completely resistant to 100 γ per cubic centimeter or more and in guinea pigs at concentrations much less than this For the purposes of our present discussion, then, it may be accepted that the emergence of resistance is a disadvantage to streptomycin therapy

With the regimen first employed in this study, a daily dosage of 2 gm of streptomycin, 82% of all positive cultures were found resistant to 10 γ or more per cubic centimeter after 120 days of therapy As long as the duration was maintained at 120 days, this incidence could not be decreased by reducing the daily dosage to 1 or 0 5 gm [1b] The obvious expedient of decreasing the duration of treatment was therefore explored in a series of 6 regimens (employing streptomycin or dihydrostreptomycin) extending over 90, 60, and 42 days This last regimen reduced the incidence of resistance among positive cultures to approximately 45%,[1c] but this incidence is still uncomfortably high Also, the 42-day regimen was clearly inferior in therapeutic efficacy as gauged by x ray improvement and sputum conversion Reducing duration of treatment did not provide a satisfactory solution to the difficulty

Therefore, two other procedures were investigated by the study the concomitant use of *p* aminosalicylic acid (PAS) with streptomycin, and the use of 1 gm of streptomycin twice a week rather than daily, a regimen first used by Fitzsimons General Hospital The study has not found *p* aminosalicylic acid, given alone in a daily oral dosage of 12 gm, to be as effective for treating pulmonary tuberculosis as it has been reported by Swedish investigators, because moderate or 'marked' radiologic improvement occurred in 48% of 739 patients receiving streptomycin and in only 17% of 247 patients receiving *p* aminosalicylic acid [3c] In the figures just quoted, it could be argued properly that the scales had been weighted against *p* aminosalicylic acid, since the patients receiving it had already received a course of streptomycin and the necessity for further chemotherapy may well have indicated the presence of a more malignant type of disease However, there can be no doubt of the favorable effect exerted against the development of resistance to streptomycin by concomitant therapy with *p* aminosalicylic acid Thus, of 224 patients treated with the combined regimen, only 31% (instead of 82% treated with streptomycin alone) of those cultures which continued to be positive after 120 days of therapy were resistant to 10 γ or more per cubic centimeter of streptomycin [3c] The second procedure, that of decreasing the frequency of injections to twice a week, also met with some measure of success Resistant bacilli appeared more slowly and, after 120 days of therapy, 67% (rather than 82%) of 118 positive cultures were resistant by the same criteria (Tempel et al [3c])

Since both of these procedures seemed promising independently, the obvious indication was to use them both in "combined, intermittent therapy (i e, 1 gm of streptomycin twice weekly plus 12 gm of *p* aminosalicylic acid daily, given concurrently) Under these circumstances, the incidence of resistance among positive cultures decreased to 17% after 120 days of therapy (Table 12 [3c])

Several matters of some interest in connection with resistance may bear brief mention

1 Although resistance to *p* aminosalicylic acid develops, its incidence does not usually exceed 10% after 120 days of combined streptomycin and *p* aminosalicylic acid therapy (Table 12 [3c]) When *p* aminosalicylic acid is given alone (i e, in the absence of streptomycin), the incidence of resistance is about 45%

2 No attempt has yet been made by members of the study to determine the minimum effective dose of *p*-aminosalicylic acid, but Fitzsimons General Hospital has presented evidence favoring its daily rather than biweekly administration Patients have objected strenuously to attempts to increase the daily oral dosage to 18 or 24 gm [3c]

3 Since tubercle bacilli have been rendered resistant to streptomycin in so many patients and since this resistance is relatively permanent, it is surprising that so few other patients appear to have been infected by them This matter does not seem to pose the serious public health problem envisaged earlier

4 An increasing number of cases are being reported in which, some months or even years after cessation of streptomycin therapy and development of resistant bacilli, sensitive cultures have been obtained This no longer seems likely to be a laboratory error but rather an expression of the heterogeneity of the bacillary population with regard to streptomycin

In this matter of resistance, then, considerable progress has been made, most notably by using *p* aminosalicylic acid in combination with streptomycin, and also by injecting the latter drug less frequently Before these factors were introduced, incidence of resistance was about 82% to 10 γ per cubic centi

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[3] (*a*) Minutes of the Eighth Streptomycin Conference, Nov 10-13 1949 (*b*) Transactions of the Ninth Streptomycin Conference April 18-21 1950 (*c*) Transactions of the Tenth Conference on the Chemotherapy of Tuberculosis Jan 25 28 1951 published by the Veterans Administration.

[4] O Connor *J B* Christie *F J* and Howlett K S Jr Neurotoxicity of Dihydrostreptomycin Effects of Longer Term Therapy Am. Rev Tuberc 63 312, 1951 D Esopo [3b, c]

meter after 120 days of therapy, it is now less than 20% The incidence of resistance to 100 γ or more per cubic centimeter has been decreased from 62% to 5% by the same procedures

PULMONARY TUBERCULOSIS

The advances made in overcoming the factors of toxicity of, and bacterial resistance to, streptomycin would have been useless if accomplished at the expense of therapeutic efficacy Although passing reference to this point has already been made, it is of such outstanding importance that supporting data is supplied in Table 1 For simplicity in presentation the criteria have been confined to radiologic change and sputum conversion (by culture) a simplification justified by past experience The patients in regimen 1 (2 gm streptomycin daily) were treated in 1946 and 1947, whereas those in regimens 2 and 3 were treated in 1949 and 1950, and p aminosalicylic acid is absent from regimen 1 and present in the other regimens However, alternate patients were assigned to regimens 2 and 3 on the basis of hospital registration numbers and background factors (e g, race, age extent and trend of disease) in each group were carefully analyzed and proved satisfactorily similar The encouraging difference in incidence of sputum conversion is presumably due to the concomitant collapse therapy permitted with the last two regimens At any rate, there can be no doubt that the regimens in present use (2 and 3) have maintained the therapeutic efficacy of the earlier one which contained larger doses of streptomycin and did not include *p*-aminosalicylic acid

TABLE 1 —*Comparison of Therapeutic Efficacy of Three Regimens in Pulmonary Tuberculosis (at End of Therapy)*

Results	(1) 2 0 Gm Streptomycin Daily 120 Days		(2) 1 0 Gm Streptomycin Daily + 12 0 Gm PAS Daily 120 Days		(3) 1 0 Gm. Streptomycin Semiweekly + 12 0 Gm PAS Daily 120 Days	
	No Cases	Percentage	No Cases	Percentage	No Cases	Percentage
Radiologic improvement						
Moderate or marked	248	66	209	48	139	46
Slight	64	17	131	30	94	31
All degrees	312	83	340	78	233	77
Total cases observed	376	100	430	100	303	100
	No Cases Observed	Percentage Converted	No Cases Observed	Percentage Converted	No Cases Observed	Percentage Converted
Sputum conversion (culture)	120	32	316	69	200	50

The abbreviated data of Table 1 are all obtained at the 120 day point after the beginning of therapy No mention has been made of follow-up or of the relapses which occur in pulmonary tuberculosis Such information is beginning to become available Commander Canada and his collaborators have published a three year follow up of 202 cases in which the earliest regimen,[5] 2 gm of streptomycin daily for 120 days, was used They reported that 28% of the patients were dead, arrest or apparent arrest of disease had occurred in 40%, approximately one third of the survivors were gainfully employed, and one half were able to be up and about for nine hours or more per day The incidence of sputum conversion had increased to 50% after completion of therapy, and one half of the survivors who had exhibited vestibular disturbances during therapy continued to show some residuals, although in only 6% was it of sufficient degree to interfere with a gainful occupation In the absence of a comparable series of patients not treated with streptomycin, it is difficult to know precisely how these figures should be regarded but the fact that the disease was progressive in 84% (and improving in only 3%) at the time treatment was started, carries considerable weight in the judgment of the study It should be remarked that collapse procedures were used in approximately two-thirds of the cases following chemotherapy

Follow up data describing the effects of eight regimens on 813 cases during the preceding year (discussion of Table 1B [3c]) were presented before the conference of January 1951 Analysis was more competent than in previous series because background material was available and seemed satisfactorily comparable in each group Regimens enduring for 120 days appeared superior to those of 90 days On the other hand, little or no difference in therapeutic efficacy could be demonstrated by the substitution of interrupted (twice weekly) for daily therapy, or by substituting dihydrostreptomycin for streptomycin in equivalent (1 gm daily) dosage

The primary concern of the Veterans Administration Army-Navy study has been the comparative examination of regimens in an attempt to bracket the target and to gain maximum therapeutic efficacy with minimum toxic manifestations and bacterial resistance The investigators in the study were so thoroughly convinced that *p* aminosalicylic acid should always be given concomitantly with streptomycin that the latter drug has not been used alone (except in special circumstances) since the fall of 1949 The decision is not based on any increased effectiveness of the combined therapy during regimens of 120 days or less which indeed, has not been detectable but on delay in the development of resistant bacilli and, presumably consequent prolongation of the effective period of streptomycin This delay has raised the interesting and logical possibility of prolonging treatment for 8 or 12 months, or even more These prolonged regimens first used by the Veterans Administration Hospital at Sunmount N Y, have been the chief concern of the study since April, 1950 The initial results of this project have been very promising One of the most striking effects has been the difficulty in obtaining positive sputum cultures (i e, an increased incidence of sputum conversion) as long as the combined therapy was continued (Table 1A [3c]) It is, of course too early to make any precise statements on these matters but it is the opinion of the study group that the use of prolonged regimens should be seriously considered

EXTRAPULMONARY TUBERCULOSIS

The indications for the use and success of chemotherapy in extrapulmonary tuberculosis have not changed recognizably in the past year Therefore, they deserve no place in a capsule summary With two exceptions to be mentioned, the study group no longer collects data on current experience in these fields and has abolished its protocols The comments previously made [1b] are believed still applicable if combined with the suggested adjustments in dosage

1 *Miliary and Meningeal Tuberculosis*—Although mortality from these infections is highest in the first year after their diagnosis an appreciable number of deaths from relapses following meningitis and, usually, from the development of complicating meningitis following miliary tuberculosis occurs during the second year An evaluation of therapy is therefore scarcely justified before expiration of a two-year period This was pointed out by Bunn [6] in a two-year follow-up of the first 100 patients treated in this study At the time of his presentation the survival rate was 58% in 19 cases of miliary tuberculosis unaccompanied by meningitis and 20% in 43 cases of tuberculosis meningitis Both groups are exceedingly small and the results are inferior to many series reported from abroad and by Lincoln for example in this country In some series the discrepancy may be due to an inadequate follow up and in others to the fact that the patients were mostly or entirely children But there is no agreement on this matter and members of the conferences have never felt sufficiently sure of themselves to formulate any exact protocol for the treatment of these types of tuberculosis Consequently, the investigators have used a wide variety of regimens making statistical analysis difficult Little has been learned although during the past year or two *p* aminosalicylic acid has been used in combination with streptomycin or dihydrostreptomycin with some improvement in immediate results

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[5] Canada R O Allison S T D Esopo N D Dunner E Moyer R. E Shamaskin A Tempel C W and Charter W V Three Year Follow Up Study on 202 Cases of Pulmonary Tuberculosis Treated with Streptomycin Am Rev Tuberc 62 563 1950

[6] Bunn P A. Two-Year Follow Up Report of Patients with Miliary and Meningeal Tuberculosis Treated with Streptomycin Am J M Sc 219: 127 1950

[7] Lincoln E M and Kirmse T W *Streptomycin Promizole Therapy of Miliary and Meningeal Tuberculosis in Children* Am Rev Tuberc 61 159 1950

(Table 2) The data in Table 2 cover only one year after the start of treatment After a year's treatment the advantage of combined therapy appears to be much less (Table 9[3c]), although the number of cases is insufficient to warrant a definite statement on this point However, the conference group of January, 1951, felt justified in making combined therapy obligatory in future treatment, even to the extent of advising parenteral administration of p aminosalicylic acid if the drug could not be given by mouth

The intrathecal use of tuberculin in the treatment of meningitis, suggested and practiced by Smith and Cairns of Oxford, was discussed at some length in the conference [3c] The most recent account of this procedure was presented before the National Tuberculosis Association by Smith in April, 1951 Although it was agreed that the results were striking, members of the conference felt that the procedure was too hazardous to warrant their making any recommendation at this time

2 *Genitourinary Tuberculosis*—The only data in this field which it has seemed necessary to collect for recent conferences are those dealing with bacteriologic follow up One hundred and twenty-three patients in the series now have been observed for more than one year since the completion of a first course of chemotherapy and 100 for more than two years In an attempt to clarify interpretation of the data, the lesions were classified under renal only,' 'genital only," and 'combined renal and genital" Data on five regimens were presented to the conference of January, 1951 (Table 8 [3c]) The outstanding finding (by culture or guinea pig) was that the conversion of urine from positive to negative had withstood the passing of time surprisingly well In the renal lesions there was a drop from 53% (immediately after treatment) to 47% (more than two years later), in genital lesions from 78% to 70%, and in combined lesions from 50% to 33% The 2 gm of streptomycin daily seemed slightly more effective than 1 gm daily, and the 42-day appeared definitely less effective than the 120-day regimen Data on the combined regimens were insufficient to determine whether any advantage had been gained by the addition of *p*-aminosalicylic acid The conference members decided, as they had for pulmonary tuberculosis, to extend the duration of treatment beyond 120 days and to explore the effect of the interrupted (twice a week), combined streptomycin and *p*-aminosalicylic acid schedule

TABLE 2—*Mortality in Miliary and Meningeal Tuberculosis**

	Streptomycin or Dihydrostreptomycin			Streptomycin or Dihydrostreptomycin and *p*-aminosalicylic Acid		
	No of Cases Observed	Alive %	Dead %	No of Cases Observed	Alive %	Dead, %
Miliary only						
At start of therapy	59	100	0	43	100	0
At end of 6 mo	55	65	35	28	79	21
At end of 12 mo	48	54	46	20	65	35
At end of 24 mo	37	27	73	†		
Meningitis only						
At start of therapy	93	100	0	44	100	0
At end of 6 mo	90	42	58	39	62	38
At end of 12 mo	86	21	79	28	40	60
At end of 24 mo	80	11	89			
Miliary and meningitis						
At start of therapy	38	100	0	15	100	0
At end of 6 mo	37	41	59	12	67	33
At end of 12 mo	36	14	86	11	55	45
At end of 24 mo	36	8	92			
Miliary followed by meningitis						
At start of therapy	30	100	0	19	100	0
At end of 6 mo	30	40	60	17	71	29
At end of 12 mo	30	20	80	17	24	76
At end of 24 mo	20	0	100			

* Based on data presented to the Tenth Conference January 1951, Table 9

† Where no figures are given an insufficient number of cases was observed

PROTECTION IN THORACIC SURGERY

Early in the course of this study, the protective effect of streptomycin against postoperative extensions of infection was studied by use in alternate cases of thoracoplasty for seven days prior, and 14 days subsequent, to operation This study was discontinued in April, 1948, not because the effect of streptomycin in decreasing the incidence of complications did not seem clear but because their incidence in untreated patients was too low to justify the procedure [1b] Use of streptomycin was continued, however, in all patients subjected to pulmonary excisions and decortications At first the procedure seemed highly satisfactory,[1b] but subsequently, despite its continuance, the incidence of complications increased from twofold to fourfold [1c] The indications for resectional surgery have unquestionably been broadened during the past three years to include many cases that would have been regarded as impossibly "bad risks" before the advent of chemotherapy and improved surgical techniques In this extension of surgery may lie the explanation for the increase in complications But the question also arose as to whether deterioration in results was due to streptomycin s being administered to patients who had received a previous course of the drug and whose bacilli were therefore resistant to it Data presented to the conference of January, 1951 (Table 11 [3c]), and summarized in Table 3 of this paper, indicate that this is only partially true Thus, although results were manifestly inferior in patients with bacilli resistant to streptomycin at the time of prophylactic chemotherapy, they were somewhat inferior in those with bacilli still sensitive to concentrations of less than 10 γ per cubic centimeter despite a previous course of the drug Two negative statements, neither of them satisfying, are warranted 1 The increased incidence of postoperative complications in this study since 1948 is not wholly due to previous chemotherapy 2 Insofar as this increase in complications is associated with previous chemotherapy, it is not wholly due to the presence of resistant bacilli prior to surgery, although it may well be that the bacilli of patients treated prior to surgery become resistant more rapidly than do those from patients who received no previous chemotherapy

THERAPY WITH SUBSTANCES OTHER THAN STREPTOMYCIN OR DIHYDROSTREPTOMYCIN

Late in 1948, it was stated that it "would be strange if the first antibiotic that proved to be bacteriostatic in the treatment of human tuberculosis were to be the best '[8] However, this is precisely what has happened thus far There is no lack of rivals, but, according to the results of the study, streptomycin still leads the field by the widest of margins Nonetheless, other antibiotics deserve some brief mention

1 *Other Antibiotics*—Neomycin, viomycin, and mycomycin are of peculiar interest, because their in vitro activity is specific for acid-fast microorganisms and because they are effective against tubercle bacilli that have become resistant to streptomycin Neomycin has had some clinical trial and, in the purest preparations available, has proved not only to be a renal irritant but also to be highly toxic to the cochlear branch of the eighth cranial nerve In two small series reported to the conference of January, 1951, 10 of 18 patients were said to have become totally deaf and a similar experience was reported in a larger series of 43 cases [3c] Viomycin has been employed in 49 cases of pulmonary tuberculosis in seven clinics (five of which are outside the study) [9] A preliminary report to the conference of January, 1951, indicated viomycin to be less effective and more toxic than streptomycin [3c] Since one of its toxic effects is on the eighth nerve, it seems unlikely that it will be useful as adjunctive therapy with streptomycin Mycomycin is still in the

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8 Walker A M Hinshaw H C. and Barnwell J B Streptomycin in Treatment of Tuberculosis in Man, in Waksman S A Streptomycin Its Nature and Application Baltimore The Williams & Wilkins Company 1949 chap 18

9 Finlay A C and others Viomycin a New Antibiotic Active Against Mycobacteria Am Rev Tuberc 63:1 1951 Bartz, O R and others Viomycin a New Tuberculostatic Antibiotic ibid. 63:4 1951 Ehrlich J and others *Antimicrobial Activity of Streptomyces Floridae and of Viomycin* ibid 63:7 1951 Hobby G L and others Activity of Viomycin Against Microorganisms in Vitro and in Vivo ibid 63:17 1951 Youmans, G P and Youmans A. S Effect of Viomycin in Vitro and in Vivo on Mycobacterium Tuberculosis ibid 63 25 1951 Steenken W Jr and Wolinskey E Viomycin in Experimental Tuberculosis, ibid 63:30 1951 Karlson A G and Gainer J H Effect of Viomycin in Tuberculosis of Guinea Pigs, Including in Vitro Effects Against Tubercle Bacilli Resistant to Certain Drugs, ibid 63 36 1951 Pan S Y and others Viomycin Acute and Chronic Toxicity in Experimental Animals ibid 63:44 1951 Werner C A and others *Toxicity of Viomycin in Humans*, ibid 63 49 1951

laboratory development stage, the chief difficulty encountered being concerned with its stability at room temperature[3b,c] Although progress is being made, it would still be almost necessary to have the patient inside a deep-freeze with the drug if a clinical trial were to be made

Unlike the three antibiotics just mentioned, aureomycin and terramycin have relatively little tuberculostatic activity in vitro, but, because they are somewhat effective under these circumstances and relatively nontoxic, clinical trials appeared justified (These trials, like numerous others, including one calling for the single weekly injection of 2 gm of streptomycin initiated by the Navy, are referred to as pilot studies and are regarded as one of the most useful functions of the study Hospitals are asked to participate, and thus it becomes possible to collect preliminary data on a considerable number of matters for the guidance of future conferences) For aureomycin, only one hospital was involved and only 10 patients were treated, but the selection of patients was such that it seemed permissible to conclude that the effects were no more beneficial than could have been expected from bed rest alone[3a] To the conference of January, 1951, six hospitals reported on a pilot study with terramycin The study had been in progress for approximately six months, and 62 patients had been treated There was some disagreement concerning results, as five hospitals were thoroughly unimpressed whereas one (Fitzsimons) felt that a beneficial effect had been observed and, furthermore, that the emergence of resistance to streptomycin appeared to be suppressed or delayed when the two drugs were given concurrently[3c]

2 *Hormones* — A modest symposium on corticotrophin (ACTH) and cortisone was held during the conference of January, 1951[3c] The rabbit was added to the previous three laboratory animals (mouse,[10] guinea pig,[11] rat[12]) in which definitely harmful effects were proved to have been exerted by these hormones in the presence of experimental tuberculosis The lesions were more extensive, more numerous, and death occurred earlier than in untreated control animals In the course of general discussion, approximately 20 cases of clinical tuberculosis were reported in which, after the anticipated initial symptomatic improvement, the end results of treatment were unfavorable Tuberculosis seems to be another of the infectious diseases in which these hormones provide a physiological tool rather than a therapeutic weapon (Finland[3c]) Although the conference group does not seek to advise the medical profession, it felt justified in endorsing the statement of the National Tuberculosis Association that these hormones should not be used in patients with active tuberculosis and that they be used with extreme caution in human beings with possibly latent tuberculous infection until further investigative work has shown that such administration may be safe "[13]

3 *Miscellaneous* —Amithiozone (tibione®) is the only thiosemicarbazone with which the study group has had experience, and this experience has not been altogether satisfactory It was employed at a daily dosage of 0 2 gm in 226 cases of pulmonary tuberculosis of which approximately one half were resistant to streptomycin Although some patients, including those resistant to streptomycin, showed considerable radiologic improvement after four months' therapy, the incidence was much less than that obtained with other regimens (Tables 1C and D[3c]) Also, amithiozone's toxicity greatly exceeded either that of streptomycin or *p*-aminosalicylic acid, so that it was necessary to stop treatment in one-third of the cases The chief toxic manifestations of amithiozone are liver damage (proved by biopsy) and blood dyscrasias, particularly a fall in hemoglobin Although both of these lesions seem to be reversible, their existence leaves doubt as to the wisdom of amithiozone therapy The study is to be continued on a smaller basis, with a daily dosage of 0 1 gm , in the hope of diminishing or avoiding these toxic effects

Cepharanthin is an alkaloid used widely in Japan during recent years for treating tuberculosis and leprosy Although the reports are more enthusiastic than critical, laboratory work in this country has indicated that it does not warrant a clinical trial[14]

p-Aminosalicylic acid, already discussed at as great a length as this type of presentation permits, is mentioned again to cite the fact that pilot studies intended to minimize its untoward effects on the gastrointestinal tract by the use of a variety of capsules and granules have been unsuccessful Four grams is being given three times daily in solution as the sodium salt with meals without too much difficulty

Benemid does not affect tuberculosis It is being employed in a pilot study to determine its effect on the serum concentrations of *p* aminosalicylic acid

TABLE 3 —*Protection in Pulmonary Surgery**

		Sputum Culture or Guinea Pig			Postoperative Complications				
Type of Surgery	No of Cases	Converted %	Not Converted %	Unknown %	Spread %	Fistula %	Empyema %	Wound Infection %	Operative Deaths %
Lobectomy									
No previous streptomycin	337	72	16	12	9.1	3.6	2 0	2 0	1.8
Previous streptomycin									
Resistant	47	34	53	13	20 8	29 2	18 8	6.3	2.1
Sensitive	133	58	28	14	10 0	8 0	5.8	2 0	1.5
Resistance unknown	141	70	13	17	8 2	6 1	2.0	3 4	2 1
Pneumonectomy									
No previous therapy	150	75	14	11	10 0	8 7	9 3	0.7	10 0
Previous therapy									
Resistant	50	50	44	6	24 0	24 0	26 0	24 0	16 0
Sensitive	53	60	21	10	12.9	16 7	22.2	18 0	9 4
Resistance unknown	57	54	33	13	13.2	17 0	18.0	9.5	9 6
Decortication									
No previous therapy	113	56	27	17	2 6	7 0	7 0	4 4	0 0
Previous therapy									
Resistant	5								
Sensitive	16	60	31	19	6.3	6 3	18 9	6.3	6.3
Resistance unknown	23	40	30	30	4 4	8 8	17 6	13 2	4.3

* Based on data presented to the Tenth Conference January 1951 Table 11

SUMMARY

The series of cases of tuberculosis studied by the Veterans Administration, Army, and Navy has increased to about 10,000 For obvious reasons, no attempt is being made to summarize this series here Rather, an attempt is made to report on the progress of the study, since a somewhat similar report to the Council on Pharmacy and Chemistry was published in March, 1950 The summary can be made in four sentences, the first two containing good tidings, the last two containing, respectively, dubious and bad tidings

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[10] Hart P D and Rees, R. J Enhancing Effect of Cortisone on Tuberculosis in the Mouse Lancet 2 391, 1950

[11] Spain D M and Molomut, N Effects of Cortisone on the Development of Tuberculous Lesions in Guinea Pigs and on Their Modification by Streptomycin Therapy Am. Rev Tuberc 62: 337 1950

[12] Michael M Jr Cummings, M M and Bloom, W L. Course of Experimental Tuberculosis in the Rat as Influenced by Cortisone Proc Soc. Exper Biol & Med 75 613 1950

[13] Nat Tuberc A Tr 37 4 (Jan) 1951

[14] Personal communications from Drs William H Feldman Lawrence B Hobson, and William Steenken Jr

1. Reducing the dosage of streptomycin to 1 gm., either daily or twice a week, has reduced toxicity without impairing therapeutic efficacy.

2. The concomitant daily administration of p aminosalicylic acid has definitely delayed the emergence of streptomycin-resistant tubercle bacilli and has thereby made possible the desired continuation of effective therapy beyond four months, a procedure that is now being explored.

3. Preliminary observations indicate that concomitant administration of p aminosalicylic acid and streptomycin may have further increased the survival rate of patients with meningeal or miliary tuberculosis.

4. Although many antibiotics and other drugs have been studied during the past 18 months, and although several of them undoubtedly have some bacteriostatic action on tubercle bacilli, none of them promises a favorable comparison with streptomycin, much less of being the "wonder drug" frequently mentioned by the press.

BUREAU OF MEDICAL ECONOMIC RESEARCH

MEDICAL CARE PRICES AND THE COST OF LIVING

Frank G. Dickinson, Ph.D., Chicago

Again, in 1950 the Consumers' Price Index, compiled by the United States Bureau of Labor Statistics, was higher than the index of the prices of medical care items. The Consumers' Price Index, which measures monthly the changes since 1935-1939 in the prices of fixed quantities of goods and services normally purchased by moderate income families in large cities, stood at 171.9 (adjusted), the index of medical care and drugs, a small part of the Consumers' Price Index, was 147.9 (unadjusted). The base period 1935-1939 equals 100.

According to these indexes, which are considered our best general measure of the purchasing power of the consumer's dollar, the price of medical care has risen 48% since 1935-1939 while the general cost of living has risen 72%. Stated another way, a dollar in the base period could buy a dollar's worth of medical care or a dollar's worth of all the goods and services priced for the Consumers' Price Index, a dollar in 1950 could buy only 58 cents' worth (58.2) of all goods and services but 68 cents' worth (67.6) of medical care. Thus, in terms of the purchasing power of the dollar, medical care was 14% cheaper in 1950 than in 1935-1939 (58.2¢/67.6¢ = 86% or 147.9/171.9 = 86%).

In the accompanying table, the Consumers' Price Index is presented along with the price indexes of the medical care items for the years 1947 through 1950.[1] The index of medical care and drugs is divided into two main parts—(I) Medical care, excluding drugs and (II) Prescriptions and drugs. For 1950 the index of medical care excluding drugs was 153.1, the index of prescriptions and drugs was 124.8. The index of physicians' fees (general practitioner, surgeon, specialist) was 140.0, of general practitioners' fees, 139.8, and of surgeons' and specialists' fees, 140.6. The index of dentists' fees was 154.3 and the highest index, 235.3, was for hospital rates. Thus, with the exception of hospital rates, the prices of individual medical care items have risen considerably less than the Consumers' Price Index.

As explained in earlier publications,[1] the high hospital rate index reflects the fact that hospitals are singularly exposed to the forces of inflation. It also must be realized that the period 1935-1939, while generally accepted by economists as a relatively normal period for the purposes of general statistical comparison, is not an equally good base in the case of every item. There is reason to believe that it is a somewhat less appropriate base to use for the measure of the increase in hospital rates. The eight hour day for nurses in hospitals was first introduced during the early 1930's, but it was not until the late 1930's and early 1940's that it prevailed in most hospitals. Thus, this change in the working day of nurses, which would considerably affect the labor costs of hospitals, was not fully accomplished until after the base period. Other developments, however, might have counterbalanced this one factor. Complete examination of all the factors affecting the choice of a base period is beyond the scope of this article.

The Consumers' Price Index and Price Indexes for Medical Care for Moderate Income Families in Large Cities, for the Years 1947-1950

(1935-1939 = 100)

	1947	1948	1949	1950
Consumers' Price Index (cost of living)	159.6	171.9	170.2	171.9
(Unadjusted)*	(159.2)	(171.2)	(169.1)	(171.2)
Medical care and drugs	131.6	140.1	144.9	147.9†
I Medical care excluding drugs	135.8	144.4	149.7	153.1
A Physicians' fees (general practitioner surgeon specialist)	130.2	135.5	137.9	140.0
1 General practitioners' fees	130.3	135.2	137.7	139.8
(a) Office visit	131.5	136.9	139.0	140.9
(b) House visit	125.8	128.5	131.4	133.9
(c) Obstetric case	143.7	153.4	155.6	157.3
2. Surgeons and specialists' fees	129.4	135.8	138.4	140.6
(a) Appendectomy adult	128.2	133.1	134.2	137.4
(b) Tonsillectomy child	130.7	138.7	142.8	144.0
B Dentists' fees	137.4	144.8	150.6	154.3
1 Fillings	137.7	145.1	150.9	154.5
2 Extractions	139.0	146.8	152.9	156.9
C Optometrists' fees eyeglasses	118.6	123.6	127.6	128.9
D Hospital rates	179.6	209.7	226.8	235.3
1 Men's pay ward	194.4	231.6	253.5	265.5
2 Semi private room	175.1	204.2	221.7	229.6
3 Private room	169.7	194.7	207.7	213.7
II Prescriptions and drugs	115.4	121.5	123.3	124.8
A Prescriptions	123.7	133.9	137.1	140.7

Source: for Consumers' Price Index, Monthly Labor Review, Bureau of Labor Statistics, U. S. Department of Labor 72:494 (April) 1951; for medical care price indexes 1947-1949, Indexes of Retail Prices of Apparel, Housefurnishings and Services and Miscellaneous Goods to Moderate-Income Families in Large Cities, Quarterly reports—June 1948, March 1949 and March 1950 and data for 1950 through correspondence, U. S. Bureau of Labor Statistics.

* See text for explanation.

† Subject to revision.

The relatively small increase in the price of physicians' services in an inflationary era is to be expected. These prices are influenced by custom and are not as sensitive to changes in the economy as are the prices of most goods and services—particularly those whose prices must cover the costs of many other items used in their production. Physicians' fees belong to a class known as "sticky" prices; they move neither up nor down as rapidly or as far as other prices. The economic position of the physician, however, becomes adjusted to changes in the rest of the economy in other ways. Thus, while physicians' fees had not increased as much as other prices by 1949 the physician's collections had become so much better and his "output" so much greater that his over-all income had increased since 1935-1939

Director, Bureau of Medical Economic Research.

This article was prepared with the assistance of Janice Oberman, Research Assistant, American Medical Association Bureau of Medical Economic Research; Ewan Clague, Commissioner of Labor Statistics, and Ethel D. Hoover, Chief, Branch of Consumers' Prices, Bureau of Labor Statistics, United States Department of Labor.

[1] This table is an extension of the tables on medical price indexes in the following publications of the Bureau of Medical Economic Research, American Medical Association: Bulletin 62, Comparative Increases in the Costs of Medical Care and in the Costs of Living, 1948; Bulletin 66, The Cost and Quantity of Medical Care in the United States, 1948; Medical Care Prices vs. Cost of Living, J. A. M. A. 139: 591 (Feb. 26) 1949, reprinted in Bulletin 67, Four Recent Articles on Medical Economics, 1949; Medical Care Prices vs. Cost of Living, J. A. M. A. 143: 1198 (July 29) 1950, reprinted as Bulletin 76, 1950.

just about as much as the national income per capita[2] In order for the physician to retain the same economic position in a time of rapidly changing price levels, it is not necessary for him to change his price to the extent that other prices have changed.

It should always be kept in mind that an index of prices measures *changes* in the level of prices but does not indicate the level itself for any year or for the base period The significance and applicability of the Consumers Price Index and the indexes of the individual items may be somewhat limited by the fact that the prices represented are those for goods and services purchased by moderate income families in 34 large cities To the extent that the rise, percentagewise, in prices of goods purchased by low and high income families in all cities corresponds with the price rise, percentagewise of goods for the moderate income families in the 34 cities, the indexes reflect price changes for goods purchased by all persons in the United States Despite these technical limitations this Index is considered the best measure of changes in purchasing power and is widely used to compute cost-of living wage and salary adjustments

For the past few years the Bureau of Labor Statistics has been engaged in preparations for a large scale revision of its price indexes This revision is designed to modernize the indexes so that they will reflect certain population changes and changes in the buying habits of the American people It was recognized that many goods which have become an important part of the budget of the moderate income consumer were not priced or did not exist when the items for pricing were originally selected and that the distribution of weights among the various items has changed considerably during the past few years In the medical care field, for example, the wonder drugs and the extra services in hospitals, which have become such an important part of medical care, were not included in pricing medical care items As a preliminary phase of the general revision which is scheduled to be completed by the middle of 1952, the Bureau of Labor Statistics has undertaken a study to determine the individual goods and services to be included in the revised index

Originally, no important changes were to be made in the indexes until the general revision was finished With the outbreak of the fighting in Korea, however the sharp and diverse price movements and the need for economic stabilization made it necessary to have as accurate a measure of prices as possible The Bureau of Labor Statistics, therefore, introduced certain immediate improvements and adjustments No changes in basic concepts or methodology will be made until the final revision The present adjustments consist chiefly of a revision of city population weights based on the 1950 census a correction of the new unit bias" in the rent index the addition of new items, and a revision of commodity weights These adjustments have already been made in the calculation of the Consumers Price Index The indexes for the individual medical care items have not yet been adjusted[3] Since the adjusted Consumers Price Index is the best measure of price change it is shown in our table (row 1) in place of the former unadjusted data The unadjusted data have been inserted in parentheses in the second row merely for purposes of comparison, these are slightly lower than the adjusted series

It is believed that these adjustments and particularly the changes to be made in the final revision of the Index will considerably improve the representativeness of the Index The Bureau of Medical Economic Research has previously expressed its appreciation of the cooperation shown by physicians, dentists, and hospital administrators in providing the field representatives of the Department of Labor with information regarding fee schedules and charges In view of the important changes to be made in the Index and the great usefulness of these data to the Bureau it is hoped that these groups will continue to show their cooperation

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[2] Dickinson F G., and Bradley C. E Survey of Physicians Incomes J A M A 146:1249 (July 28) 1951 Reprinted as Bulletin 84 Bureau of Medical Economic Research American Medical Association 1951

[3] The 1950 index for medical care and drug items was not revised when the all items index was adjusted because the same price relatives for individual items were used in both the adjusted and unadjusted series

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COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

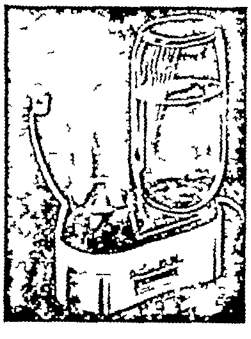
The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports

RALPH E DE FOREST, M.D., *Secretary*

ELECTRESTEEM VAPORIZERS ACCEPTED

Manufacturer Electric Steam Radiator Corporation, 1 Electric Ave, Paris, Ky

The Electresteem Vaporizers, Models 10 24 hour Standard and 10 24 hour DeLuxe, are devices for humidifying rooms by heating water and discharging the vapor The water is heated directly by the passage of an alternating current and is thus evaporated The heater requires a source of 60 cycle current at 115 volts and draws 350 watts The generation of heat and liberation of vapor takes place in a small chamber somewhat removed from the main water reservoir, so that only a small amount of water is hot at any given time and the liberation of vapor begins very soon after the electricity is turned on It will raise the humidity in a small room more than one unit must be used for a large room


Electresteem Vaporizer

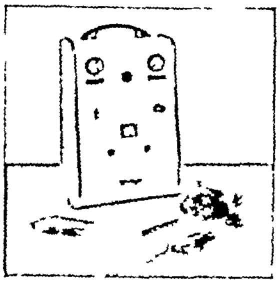
The specimen submitted by the firm was designed to hold a one gallon glass jar (3 780 cc) Its overall dimensions are 27 by 27 by 12 cm (10¾ by 10¾ by 4¾ in) and it weighs 1 25 kg (2¾ lb) Prepared for shipping it measures 28 by 28 by 13 cm (11 by 11 by 5 in) and weighs 1 4 kg (3 lb)

Laboratory measurements and evidence from other acceptable sources indicated that the device performed as represented by the manufacturer The device is listed by Underwriters Laboratories, Inc The Council on Physical Medicine and Rehabilitation voted to include the Electresteem Vaporizers, Models 10 24 hour Standard and 10 24 hour DeLuxe, in its list of accepted devices

PEERLESS HIGH FREQUENCY EPILATION UNIT, NO 108, ACCEPTED

Manufacturer Peerless X-Ray Laboratories & Mfg Corp, 467 Tenth Ave, New York 18

The Peerless High Frequency Epilation Unit No 108 is a device intended for use in the removal of superfluous hairs The dimensions are 43 by 27 by 20 cm (17 by 10½ by 8 in) and the weight is 8 6 kg (19 lb) Packed for shipment it measures 51 by 25 by 30 cm (20 by 10 by 12 in) and weighs 11 4 kg (25 lb) The foreign shipping weight is 18 kg Accessories not included in these shipping weights, are a footswitch hand electrode electrode wire needle holder and a dozen needles The device requires a source of 50 to 60 cycle alternating current at 110 or 220 volts and draws 50 watts of power A previous model was accepted by the Council and the acceptance was announced in THE JOURNAL of September 14 1946


Peerless High Frequency Epilation Unit No 108

Evidence from sources acceptable to the Council indicated that the device was soundly constructed and performed as represented by the manufacturer The Council on Physical Medicine and Rehabilitation voted to include the Peerless High Frequency Epilation Unit No 108 in its list of accepted devices

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	1947	1948	1949	1950
Consumers Price Index (cost of living) (Unadjusted)*	159 6 (159.2)	171 9 (171 2)	170 2 (169 1)	171.9 (171.2)
Medical care and drugs	131 6	140 1	144.9	147.9†
I Medical care excluding drugs	135 8	144 4	149 7	153.1
A Physicians fees (general practitioner surgeon specialist)	130 2	135 5	137.9	140 0
1 General practitioners fees	130.8	135.2	137 7	139 8
(a) Office visit	131.5	136 0	139 0	140 9
(b) House visit	125 3	128.5	131 4	133.9
(c) Obstetric case	143 7	153 4	155 6	157.3
2. Surgeons and specialists fees	129 4	135.8	138 4	140 6
(a) Appendectomy adult	128 2	133 1	131.2	137 4
(b) Tonsillectomy child	130 7	138 7	142.8	144 0
B Dentists fees	137 4	144.8	150 6	154 3
1 Fillings	137 7	145.1	150 9	154.5
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C Optometrists fees eyeglasses	*118 6*	*123 6*	*127.6*	*128.9*
D Hospital rates	179 6	209 7	226 8	235.3
1 Men s pay ward	194 4	231 6	253.5	265.5
2 Semi private room	175.1	204.2	221 7	229 6
3 Private room	169 7	194 7	207 7	213
II Prescriptions and drugs	115 4	121.5	123.3	124 8
A Prescriptions	123 7	133 9	137.1	140 7

Source for Consumers Price Index Monthly Labor Review Bureau of Labor Statistics U S Department of Labor 72 494 (April) 1951 for medical care price indexes 1947 1949 Indexes of Retail Prices of Apparel Housefurnishings and Services and Miscellaneous Goods to Moderate Income Families in Large Cities Quarterly reports—June 1948 March 1949 and March 1950 and data for 1950 through correspondence, U S Bureau of Labor Statistics

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Director Bureau of Medical Economic Research

This article was prepared with the assistance of Janice Oberman, Research Assistant American Medical Association Bureau of Medical Economic Research Ewan Clague Commissioner of Labor Statistics and Ethel D Hoover Chief Branch of Consumers Prices Bureau of Labor Statistics United States Department of Labor

[1] This table is an extension of the tables on medical price indexes in the following publications of the Bureau of Medical Economic Research American Medical Association Bulletin 62 Comparative Increases in the Costs of Medical Care and in the Costs of Living 1948 Bulletin 66 The Cost and Quantity of Medical Care in the United States 1948 Medical Care Prices vs Cost of Living J A M A **139**:591 (Feb 26) 1949 reprinted in Bulletin 67 Four Recent Articles on Medical Economics 1949 Medical Care Prices vs Cost of Living J A M A **143**:1198 (July 29) 1950 reprinted as Bulletin 76 1950

just about as much as the national income per capita[2] In order for the physician to retain the same economic position in a time of rapidly changing price levels it is not necessary for him to change his price to the extent that other prices have changed

It should always be kept in mind that an index of prices measures *changes* in the level of prices but does not indicate the level itself for any year or for the base period The significance and applicability of the Consumers Price Index and the indexes of the individual items may be somewhat limited by the fact that the prices represented are those for goods and services purchased by moderate income families in 34 large cities To the extent that the rise, percentagewise in prices of goods purchased by low and high income families in all cities corresponds with the price rise, percentagewise, of goods for the moderate income families in the 34 cities, the indexes reflect price changes for goods purchased by all persons in the United States Despite these technical limitations this Index is considered the best measure of changes in purchasing power and is widely used to compute cost-of living wage and salary adjustments

For the past few years the Bureau of Labor Statistics has been engaged in preparations for a large scale revision of its price indexes This revision is designed to modernize the indexes so that they will reflect certain population changes and changes in the buying habits of the American people It was recognized that many goods which have become an important part of the budget of the moderate income consumer were not priced or did not exist when the items for pricing were originally selected and that the distribution of weights among the various items has changed considerably during the past few years In the medical care field, for example the wonder drugs and the extra services in hospitals, which have become such an important part of medical care, were not included in pricing medical care items As a preliminary phase of the general revision, which is scheduled to be completed by the middle of 1952, the Bureau of Labor Statistics has undertaken a study to determine the individual goods and services to be included in the revised index.

Originally, no important changes were to be made in the indexes until the general revision was finished With the outbreak of the fighting in Korea, however, the sharp and diverse price movements and the need for economic stabilization made it necessary to have as accurate a measure of prices as possible The Bureau of Labor Statistics therefore, introduced certain immediate improvements and adjustments No changes in basic concepts or methodology will be made until the final revision The present adjustments consist chiefly of a revision of city population weights based on the 1950 census, a correction of the new unit bias" in the rent index the addition of new items, and a revision of commodity weights These adjustments have already been made in the calculation of the Consumers Price Index The indexes for the individual medical care items have not yet been adjusted[3] Since the adjusted Consumers Price Index is the best measure of price change, it is shown in our table (row 1) in place of the former unadjusted data The unadjusted data have been inserted in parentheses in the second row merely for purposes of comparison, these are slightly lower than the adjusted series

It is believed that these adjustments and particularly the changes to be made in the final revision of the Index will considerably improve the representativeness of the Index The Bureau of Medical Economic Research has previously expressed its appreciation of the cooperation shown by physicians, dentists, and hospital administrators in providing the field representatives of the Department of Labor with information regarding fee schedules and charges In view of the important changes to be made in the Index and the great usefulness of these data to the Bureau it is hoped that these groups will continue to show their cooperation

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

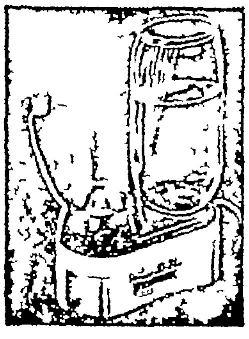
The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports

RALPH E DE FOREST, M.D., *Secretary*

ELECTRESTEEM VAPORIZERS ACCEPTED

Manufacturer Electric Steam Radiator Corporation, 1 Electric Ave, Paris, Ky

The Electresteem Vaporizers, Models 10 24 hour Standard and 10-24 hour DeLuxe, are devices for humidifying rooms by heating water and discharging the vapor The water is heated directly by the passage of an alternating current and is thus evaporated The heater requires a source of 60 cycle current at 115 volts and draws 350 watts The generation of heat and liberation of vapor takes place in a small chamber somewhat removed from the main water reservoir so that only a small amount of water is hot at any given time and the liberation of vapor begins very soon after the electricity is turned on It will raise the humidity in a small room more than one unit must be used for a large room



Electresteem Vaporizer

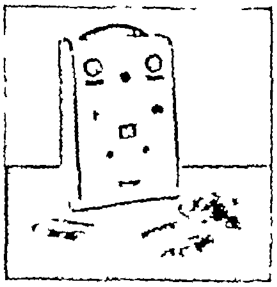
The specimen submitted by the firm was designed to hold a one gallon glass jar (3,780 cc) Its over all dimensions are 27 by 27 by 12 cm (10¾ by 10¾ by 4¾ in) and it weighs 1 25 kg (2¾ lb) Prepared for shipping it measures 28 by 28 by 13 cm (11 by 11 by 5 in) and weighs 1 4 kg (3 lb)

Laboratory measurements and evidence from other acceptable sources indicated that the device performed as represented by the manufacturer The device is listed by Underwriters Laboratories, Inc The Council on Physical Medicine and Rehabilitation voted to include the Electresteem Vaporizers, Models 10 24 hour Standard and 10 24 hour DeLuxe, in its list of accepted devices

PEERLESS HIGH FREQUENCY EPILATION UNIT, NO 108, ACCEPTED

Manufacturer Peerless X Ray Laboratories & Mfg Corp, 467 Tenth Ave, New York 18

The Peerless High Frequency Epilation Unit No 108, is a device intended for use in the removal of superfluous hairs The dimensions are 43 by 27 by 20 cm (17 by 10½ by 8 in) and the weight is 8 6 kg (19 lb) Packed for shipment it measures 51 by 25 by 30 cm (20 by 10 by 12 in) and weighs 11 4 kg (25 lb) The foreign shipping weight is 18 kg Accessories not included in these shipping weights are a footswitch hand electrode electrode wire needle holder and a dozen needles The device requires a source of 50 to 60 cycle alternating current at 110 or 220 volts and draws 50 watts of power A previous model was accepted by the Council and the acceptance was announced in THE JOURNAL of September 14 1946



Peerless High Frequency Epilation Unit No 108

Evidence from sources acceptable to the Council indicated that the device was soundly constructed and performed as represented by the manufacturer The Council on Physical Medicine and Rehabilitation voted to include the Peerless High Frequency Epilation Unit, No 108 in its list of accepted devices

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[2] Dickinson F G and Bradley C E Survey of Physicians Incomes J A M A 146 1249 (July 28) 1951 Reprinted as Bulletin 84 Bureau of Medical Economic Research American Medical Association 1951

[3] The 1950 index for medical care and drug items was not revised when the all items index was adjusted because the same price relatives for individual items were used in both the adjusted and unadjusted series.

macrophages, so that more of the inhaled bacilli are retained than in the control This belief was confirmed by a quantitative study of splenic and hepatic phagocytosis of carbon particles following intravenous injection of india ink A similar increase in pulmonary retention of tubercle bacilli had been previously noted in genetically resistant rabbits [4] The increased phagocytosis, however, does not mean an increased destruction of the bacilli

While the number of pulmonary tubercles was much greater in the treated animals, each tubercle was much smaller than in the control In the control rabbits the individual tubercles averaged 5 5 mm in diameter, while the average in the cortisone-treated rabbits was about 2 5 mm The tubercles in the cortisone-treated animals were swarming with bacilli, while the control tubercles contained relatively few micro-organisms Moreover, the spread of the disease to the regional lymph nodes and to other parts of the body was markedly reduced in the treated animals In this respect, also, the reaction of the cortisone-treated susceptible rabbits was similar to that of the genetically resistant strain, in which tuberculosis develops earlier but which survive longer and have a more localized disease

CANCER TEACHING IN MEDICAL SCHOOLS

The emphasis now placed on cancer in medical schools has prompted the need for assessment of the relative effectiveness of various teaching methods and the effectiveness of medical educational programs in general The examination was originally prepared at the University of California in order to evaluate the program for bettering cancer teaching in the medical school [1] In view of the promising results obtained, a similar test on a nation-wide scale was undertaken in 1949 in consultation with, and with the financial support of, the National Cancer Institute The test was given to 9,358 students in 32 four-year medical schools in the United States [2]

The test was of the objective type and consisted of 180 five-choice, multiple-response items which varied greatly in complexity Efforts were made to sample the whole field of cancer and to avoid controversial matters The results showed wide differences between the average scores of students from school to school, the differences tending to increase with each succeeding class year The subject matter was analyzed and the items grouped according to the department of the school considered most responsible for teaching the information tested These departments were then furnished information indicating how their students answered the questions as compared with all students at a similar academic level The report reveals that many students graduating today lack important knowledge concerning the diagnosis and treatment of cancer The results of the test have already proved of benefit in the planning of cancer teaching programs, but only if the tests are given several times can changes in cancer learning be measured Present plans call for the readministration of the test in all cooperating schools each year for five years It is hoped that this will give some measure of the gain in student knowledge resulting from the education programs in medical schools throughout the country

NEUROLOGICAL "FEEDING CENTERS"

Hetherington [1] and others have demonstrated the existence in rats of a hypothalamic nucleus whose destruction leads to a marked increase in food intake, with resulting obesity This nucleus thus apparently acts as a dietary inhibitor A second center, which appears to be primarily a feeding center, is currently described by Anand and Brobeck [2] of Yale University The Yale physiologist tested the effects on food intake of small electrolytic lesions placed by the Horsley-Clarke instrument in other areas of the hypothalamus Two well-localized areas were found, destruction of both areas was followed by a complete absence of food intake even to the point of death by starvation After a destruction of one of these foci, rats continue to eat, even if previously made hyperphagic by destruction of the inhibiting nucleus

The nutritional or hormonal factors serving as primary stimulants of these feeding centers have not been determined Mayer [3] of Harvard University has suggested that blood sugar acts as the primary hormonal stimulant, a "glucostatic" theory now under investigation

ARTIFICIAL INSEMINATION

Both here and abroad, more and more consideration is being given to the medicolegal aspects of artificial insemination A study has been under way for some time by a committee appointed by the Swedish government, which in collaboration with similar committees created in Denmark and Norway is undertaking to prepare uniform Scandinavian legislation to clarify some of the legal uncertainties that arise out of this procedure Legislation having a similar objective has been considered by a number of states in this country in recent years, but no law has as yet been enacted dealing with the subject In this issue of THE JOURNAL (page 250) is published an article prepared by the Bureau of Legal Medicine and Legislation which points up some of the significant legal issues that present themselves when a child results from artificial insemination The article contains references to pertinent court decisions, medicolegal discussions, and types of legislation that have been proposed in the United States This is a subject the importance of which should be realized by all physicians who undertake artificially to inseminate a woman and is one that merits further study

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4 Lurie M B Experimental Epidemiology of Tuberculosis Hereditary Resistance to Attack by Tuberculosis and to the Ensuing Disease and the Effect of the Concentration of Tubercle Bacilli upon These Two Phases of Resistance J Exper Med 79:573 (June 1) 1944

1 Bierman H R. and McClelland J N A Study of Methods for the Improvement of Cancer Learning in the Medical School First Annual Report, J A Am M Coll 24 351 (Feb) 1949

2. Bierman H R. and McClelland J N An Achievement Examination in the Subject of Cancer for Medical School Students Pub Health Rep 66:769 (June 15) 1951

1 Hetherington A W The Relation of Various Hypothalamic Lesions to Adiposity and Other Phenomena in the Rat Am J Physiol 133:326, 1941 Non Production of Hypothalamic Obesity in the Rat by Lesions Rostral or Dorsal to the Ventro-Medial Hypothalamic Nuclei J Comp Neurol 80 33 1944 Hetherington A W and Ranson S W The Relation of Various Hypothalamic Lesions to Adioposity in the Rat Ibid 76:475 1942.

2. Anand B K and Brobeck J R. Localization of a Feeding Center in the Hypothalamus of the Rat Proc Soc Exper Biol & Med 77:323 (June) 1951

3 Mayer J Vitale J J and Bates M W Mechanism of the Regulation of Food Intake Nature 167 562, 1951

THE JOURNAL
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Edited by AUSTIN SMITH, M D
Associate Editor JOHNSON F HAMMOND M D
Editor for Medical Literature Abstracts GEORGE HALPERIN M D

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THE LOS ANGELES SESSION OF THE AMERICAN MEDICAL ASSOCIATION

The fifth annual Clinical Session of the American Medical Association, with its scientific program, exhibits, and House of Delegates meetings, will be held in Los Angeles, Dec 4-7, 1951 The Clinical Sessions, scheduled midway between the Annual Sessions of the Association, have increased in popularity since their inception four years ago One reason for this popularity is the growing realization among busy clinicians that it is impossible to keep abreast of current developments in medicine without frequent short refresher courses, such as those provided by the clinical lectures, discussions, demonstrations, and exhibits of these sessions Another is the increasing interest in, and awareness of, the activity of the governing body of the American Medical Association, the House of Delegates, which attracts a larger audience of visitors each year This year a third reason can be added the not unpleasant prospect of a brief winter holiday in sunny California

As in past years the scientific program of the Clinical Session will emphasize the practical application of recent advances in medicine to the everyday problems of general practice Outstanding clinical teachers will present lectures and demonstrations on such topics as problems in obstetrical delivery, the differential diagnosis of poliomyelitis and Coxsackie virus disease, urologic diagnosis, correctable types of heart disease, dermatologic therapy, psychotherapy, office anesthesia, acute abdominal conditions, head injuries, and allergy

In the Scientific Exhibit, housed in the Shrine Auditorium, a wealth of information and experience in many branches of medicine will be presented in condensed, graphic form Several special exhibits on fractures, obesity, and noise, that proved popular at the Atlantic City Session, will be shown again in Los Angeles The numerous technical exhibits, also located in the Shrine Auditorium, will display a variety of new drugs, books, instruments, and other equipment of use to clinicians Representatives of the manufacturers will be available to answer questions or discuss the application of these products to the individual physician's problems Continuous motion picture and television demonstrations of numerous diagnostic and therapeutic procedures will be provided

One of the high lights of the Clinical Session will be the presentation by the House of Delegates of an award to the General Practitioner of the Year The recipient of this honor is selected by a vote from among a list of candidates submitted by the county and state medical societies to the Board of Trustees

Those who have attended these meetings in previous years are aware of the advantages of early registration All others are urged to make their hotel reservations as soon as possible Application forms for hotel reservations and for advance registration may be found in this (adv pp 14-15) and subsequent issues of THE JOURNAL

CORTISONE AND TUBERCULOSIS

In 1949 Lurie [1] and his associates of the Henry Phipps Institute, Philadelphia, reported that in rabbits tuberculosis is accompanied by hypertrophy of the adrenal cortex and that the degree of hypertrophy is much greater in genetically resistant strains of rabbits than in susceptible strains This suggested a positive role of adrenal hormones in tuberculosis resistance Tests were therefore made [2] of the possible prophylactic or therapeutic action of cortisone on air-borne tuberculosis

Twenty littermates of a genetically uniform and highly susceptible strain of rabbits were divided into two groups of 10 each One group received intramuscularly 2 mg of cortisone acetate per kilogram of body weight on alternate days The second group received the same volume of suspending fluid without cortisone Three days after the start of cortisone treatment, when the circulating lymphocytes had been markedly depressed and the fasting blood sugar increased in the cortisone-treated animals, both groups were simultaneously exposed to inhalation of a known number of viable, virulent, human-type tubercle bacilli (H37Rv), by the Lurie [3] technic, for the study of air-borne infections

All animals were maintained in a room at a constant temperature and the cortisone injections continued till the end of the experiment Thirty-four to 38 days later, the animals were killed and the number and size of the pulmonary tubercles determined On an average, four times as many tubercles were found in the lungs of the cortisone-treated animals as in the controls For example, 275 tubercles developed in the lungs of one treated rabbit and only 72 in the lungs of its control

The simplest explanation of this difference is that cortisone increases the phagocytic activity of alveolar macrophages, so that more of the inhaled bacilli are retained than in the control This belief was confirmed by a quantitative study of splenic and hepatic phagocytosis of carbon particles following intravenous injection of india ink A similar increase in pulmonary retention of tubercle bacilli had been previously noted in genetically resistant rabbits [4] The increased phagocytosis, however, does not mean an increased destruction of the bacilli

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[1] Lurie M B Abramson S and Allison M J Constitutional Factors in Resistance to Infection I The Effect of Estrogen and Chorionic Gonadotropin on the Course of Tuberculosis in Highly Inbred Rabbits Am Rev Tuberc 59 168 (Feb) 1949 Lurie M B Harris T N Abramson S and Allison M J Constitutional Factors in Resistance to Infection II The Effect of Estrogen on Tuberculin Skin Sensitivity and on the Allergy of the Internal Tissues ibid 59 186 (Feb) 1949 Lurie M B Abramson S Heppleston A G and Allison M J Constitutional Factors in Resistance to Infection III On the Mode of Action of Estrogen and Gonadotropin on the Progress of Tuberculosis ibid 59 198 (Feb) 1949

[2] Lurie, M B Zappasodi P Dannenberg A M Jr and Swartz, I B Constitutional Factors in Resistance to Infection The Effect of Cortisone on the Pathogenesis of Tuberculosis Science 113 234 (March 2) 1951

[3] Lurie M B, Heppleston, A G Abramson S and Swartz, I B An Evaluation of the Method of Quantitative Airborne Infection and Its Use in the Study of the Pathogenesis of Tuberculosis Am Rev Tuberc 61 765 (June) 1950

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ORGANIZATION SECTION

OFFICIAL NOTES

The abstract of the Proceedings of the 1951 Annual Session of the American Medical Association which appeared in The Journal for June 30 and July 7 did not include the annual reports of the Treasurer and Auditor These are presented here with

TREASURER'S REPORT

Report of the Treasurer of the American Medical Association for the Year Ended Dec 31, 1950

Investments (at cost) as at Jan 1 1950		$4 716 546 79	
Bonds Purchased (at cost)	$1 880 900.32		
Common Stocks Purchased (at cost)	424 071 99	2 304 972 31	
		$7 021 519 10	
Less			
Bonds called matured or sold		2,271 370 62	
Investments as at December 31, 1950			$4 750 148 48
Balance held for investment January 1, 1950		33 057 58	
Interest and Dividends received on investments in 1950		170 369 90	
		$ 203 427 48	
Transferred to General Fund		165 675 00	
Uninvested Funds as at December 31 1950			37 752 48
Invested and Uninvested Funds as at December 31 1950			$4 787 900 96

DAVIS MEMORIAL FUND

Balance in Fund January 1 1950	$ 8 307 93	
Interest Earned on Bank Balance in 1950	104 15	
Funds on Deposit at December 31 1950		$ 8 412.08

AMERICAN MEDICAL ASSOCIATION RESEARCH FUND

Investments (at cost) as at January 1 1950	$1 491 209 38	
Bonds Purchased (at cost)	100 000 00	
	$1,591,209 38	
Less		
Bonds sold	101 106 25	
Investments as at December 31 1950		$1 490 103 13
Uninvested funds as at January 1 1950	$ 2 134 37	
Add		
Gain from sale of securities	1 862 50	
Uninvested funds as at December 31 1950		3 996 87
Invested and Uninvested funds as at December 31 1950		$1 494 100 00
Interest received on investments and transferred to General Fund to apply on Research expenditures	$ 36 834.37	

Josiah J Moore, Treasurer

AUDITOR'S REPORT

March 28, 1951

To the Board of Trustees,
American Medical Association,
Chicago, Illinois

We have examined the balance sheet of American Medical Association as of December 31, 1950 and the related statement of income for the year then ended Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances

In our opinion, the accompanying balance sheet and statement of income present fairly the financial position of American Medical Association at December 31, 1950 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent in all material respects with that of the preceding year

Peat, Marwick, Mitchell & Co

BALANCE SHEET

As of Dec 31 1950

Assets

Cash in Banks and on Hand				$ 151 762.13
Accounts Receivable				
Advertising		$ 270 199 74		
Reprints		14 268 14		
Directory Report Service—19th Edition		45,556 17		
Miscellaneous		25 605.25		355 629.30
Interest Accrued on Investments				32 865 96
Inventories of Materials Supplies Work in Progress and Publications—At cost				340 048 07
Expenditure on Publications in Progress				62,976 32
Prepaid Expenses Deposits and Advances				
Advances to cover commitments of the National Education Program		45,505 99		
Other deposits and advances		30 649.22		
Insurance and other prepaid expenses		15,258 17		91,413.38
Marketable Securities—At cost (value based on market quotations $4 736,973 68)				
United States Government securities		2 523 188 28		
Railroad municipal public utility and industrial bonds		1 802 888 21		
Common stocks		424 071 99		4 750 148 48
Representing investments of				
American Medical Education Foundation Fund		500 000 00		
General Fund		700 148 48		
Depreciation Reserve Fund		1,375 000 00		
Association Reserve Fund		350 000 00		
Retirement Reserve Fund		675 000 00		
Building Reserve Fund		450 000 00		
Equipment Modernization Reserve Fund		700 000 00		
American Medical Association Research Fund				
United States Government securities—At cost (value based on market quotations $1,446,911 88)		1 490 103 13		
Cash in bank		3 996 87		1 494 100 00
Property Plant and Equipment—At cost				
Land			328 773 98	
Building	$2 108 893.30			
Machinery and printing equipment	646 119.25			
Office and laboratory equipment	419 726.55			
	3 174 739 10			
Less—Reserve for depreciation	1,374,336 26		1 800 402 84	2 129 176 82
				$9 408 120 46

See notes to statement of income

LIABILITIES

Accounts Payable and Accrued Expenses		
State Journal Advertising Bureau		$ 53,207 05
Miscellaneous accounts payable		196 020 68
Taxes withheld from employees		32,784.38
Accrued payroll		41 167 09
Accrued taxes		
Social security	$ 10 199 65	
Real estate and personal property	58 750 00	68 949 65
		392 128 85
Provision for Payment to American Medical Education Foundation		500 000 00
Provision for Completion Costs of Publications to be issued		172 461 60
Deferred Credits		
Unexpired subscriptions to publications	376 884 88	
Income from 19th edition directory report service less accumulated costs applicable to directory	26 966 87	
Dues paid in advance	2,580 00	406 431 75
American Medical Association Research Fund Reserve		1 494 100 00
Other Reserves		
Association	350 000 00	
Retirement	675 000 00	
Building	450 000 00	
Equipment modernization	700 000 00	2 175 000 00
Capital Account		
Balance at December 31 1949	4,240 197 81	
Excess of income over expenses for year ended December 31 1950	27 800 45	4,267 998 26
		$9 408 120 46

STATEMENT OF INCOME

FOR THE YEAR ENDED DECEMBER 31 1950

Income			
Membership dues for 1950 less $2,346 955 58 allocated to National Education Program			$ 308 829 42
Fellowship dues			70,319 00
Income from investments			169 520 81
Miscellaneous receipts and other income			40 312 10
			588 981 33
Publications (Periodicals)			
Subscriptions		$2,315 212 39	
Advertising		2 599,306 74	
		4 914,519 13	
Less—Cost and expenses		3 174 818 86	1 739 700 27
National Education Program			
1949 assessments collected in 1950		70 284 50	
Unexpended assessments collected in 1949 reserved at December 31 1949 for 1950 expenditures		676 145 45	
Amount allocated from 1950 membership dues		2 346 955.58	
		3 093 385.53	
Deduct			
Expenditures for National Education Program	$2,593 385 53		
Appropriated for American Medical Education Foundation	500 000 00	3 093,385.53	
			2,328 681 60
Expenses			
Councils bureaus and related activities		1,838,381 85	
Accumulated expenses of publishing American Medical Directory 18th Edition in excess of accumulated income therefrom		43 161 86	
Accumulated expenses and provision for completion costs of publishing Quarterly Cumulative Index in excess of accumulated income therefrom		71 877 65	
Costs and other expenses of printing and procuring books pamphlets and reprints in excess of income therefrom		57 104.59	
Annual and interim sessions—Net		72,214 47	
Employees past service annuities and allowances		135 546 80	
Cash discounts—Net		36 104 66	
Depreciation and taxes unallocated		32 160 65	
Legal and sundry		14,328 62	2 300 881 15
Income in Excess of Expenses			$ 27 800 45

Notes

1 The records of the Association are maintained substantially on an accrual basis with the exception that income from current membership dues is recorded when received Collections of 1950 dues subsequent to December 31 1950 amounted to $180 600 00 at March 27 1951

2 During the year 1950 the Association revised the classification of certain of its accounts with the result that individual items are not entirely comparable with similar items of the previous year

PUBLICATIONS (PERIODICALS) COSTS AND EXPENSES

FOR THE YEAR ENDED DECEMBER 31 1950

Salaries and wages	$1 225 427 99
Paper and ink	674 848 83
Illustrations	79 245 45
Contract printing	127 069 71
Postage and cartage	193 102.11
Editorial (excluding wages)	132 446 75
Advertising sales and services (excluding wages)	95 946 92
Circulation (excluding wages)	364 429 63
Other costs—Including building and plant maintenance depreciation taxes and employee welfare tax	282 301 47
	$3 174 818 86

EXPENSES OF COUNCILS, BUREAUS AND RELATED ACTIVITIES

FOR THE YEAR ENDED DECEMBER 31 1950

Salaries and wages	$ 972 862.21
Office printing	63 985 93
Office supplies and equipment maintenance	40 650 86
Postage express and freight	29 747 15
Telephone and telegraph	15 247 74
Memberships books and periodicals	10 930 13
Legislative services	5 119 44
Statistical equipment rental	28,339 41
Membership records and reimbursement to State societies for dues collections	47,269 93
Biographical records	72 176 77
Staff and officers travel	84 649 86
Inspection of hospitals and medical schools	13 405 96
General administrative expense including allocation of headquarters maintenance employee insurance and taxes	180 501 62
Educational exhibits and literature	13 112 50
Radio and transcriptions	58 916 57
Trustee meetings	30 190.25
Conferences and meetings	55 641 34
Grants tests and surveys	33 893 67
Sundry committee meetings	64 463 83
Miscellaneous	17,276 68
	$1 838 381 85

NOTE.—The above Expenses are Allocated to the Following Councils, Bureaus and Related Activities

Association	$ 206 916 19
Department of Public Relations	102 115 95
Washington Office of A M A	158 159 93
Biographical Records	72,176 77
Membership Records	47,269 93
Survey of Medical Education	58,239 25
A M A Laboratory	72 149 95
Council on Medical Education and Hospitals	177 766 69
Council on Medical Service	89 327 86
Council on Pharmacy and Chemistry	135 468 86
Council on Physical Medicine and Rehabilitation	49 070 62
Council on Foods and Nutrition	36 035 47
Council on Industrial Health	64 626 15
Council on National Emergency Medical Service	36 721 47
A. M A Library	48 715 24
Bureau of Exhibits	38 181.56
Bureau of Health Education	150 578 01
Bureau of Investigation	20 148 90
Bureau of Legal Medicine and Legislation	52 721 98
Bureau of Medical Economic Research	140,311 28
Committee on Cosmetics	13 351 50
Committee on Rural Health	34 621 61
Committee on Therapeutic Trials	12 495 64
Committee on Therapeutic Research	7 998 13
Committee on Research	13 212 91
	$1 838 381 85

CIVIL DEFENSE

National Civil Defense Medical Conference

On Nov 9 and 10, 1951, the American Medical Association will sponsor, with the American Hospital Association and the Association of State and Territorial Health Officers, a National Civil Defense Medical Conference One of the primary purposes of the meeting, which will be held in Chicago is to bring together the state health officer, the top state hospital administrator and the most active member, *in terms of civil defense, from* each of the state medical associations The Federal Civil Defense Administration is also actively assisting in preparing the program They have assured the American Medical Association that by the date of the meeting it will be possible to present several new concrete recommendations, rather than discuss future plans

Federal Civil Defense Administration Uses Film "They Also Serve"

The film They Also Serve, which the Council on National Emergency Medical Service of the American Medical Association assisted in preparing, was used in a television series on civil defense, which has appeared for the past several Sundays over the National Broadcasting System Mr Howard R H Johnson, chief, Motion Picture Branch, Federal Civil Defense Administration, in a letter dated July 25, 1951, said in part We used several sequences from your fine film to illustrate the importance of medical services in the event of enemy attack These film sequences made a real contribution to the program

Recent Publications Regarding Civil Defense

The Council on National Emergency Medical Service of the American Medical Association has compiled the following list of articles and publications regarding the medical aspects of civil defense

Medical Aspects of Nuclear Energy
Army Navy Air Force Register July 21, 1951

Radiation Hazards
Statement by Gen James Cooney, *Chicago Medical Society Bulletin*, July 14, 1951

What If an A Bomb Hits Chicago Water Supply
Engineering News Record April 26, 1951

Mass Immunization Program
Orange County California Association Bulletin, July, 1951

Civil Defense issue of the *Bulletin of the Department of Health Kentucky*, July, 1951

Ophthalmologic Survey of Atomic Bomb Survivors in Japan, 1949
Extract from *Transactions of the American Ophthalmological Society* 1950, Vol 48

A Medical Organization for Milwaukee s Civil Defense
Milwaukee Medical Times July, 1951

First Aid and Rescue Squads of Bergen County
Bulletin of Bergen County Medical Society, April, 1951

Civil Defense—The Integration of Units
San Francisco Medical Society Bulletin August, 1951

How Hospitals Can Prepare for A Bomb
Extract from *Hospital Management*, March, 1951

Hospitals' Grim Role in Atomic Attack
Extract from *Hospital Management*, March, 1951

Emergency Medical Planning for the Unprecedented and the Unknown
Extract from *The American City* July, 1951

Emergency Medical Care if Disaster Strikes
Extract from *The American City* July, 1951

Assignment of Physicians
Extract from the *Fresno, Calif , Medical Bulletin* August, 1951

FEDERAL MEDICAL LEGISLATION

Armed Forces Reserves

Senator Russell of Georgia introduced S 1991 relating to the reserve components of the Armed Forces This bill is identical with H R 4860 (previously reported) and would rewrite the laws pertaining to the reserve organizations of the military services It would establish the Ready Reserve, Stand by Reserve and Retired Reserve

Problems of the Aging

Representative Rhodes of Pennsylvania introduced H R 393 It would authorize a Select Committee on Problems of the Aging to be composed of seven members of the House of Representatives, all appointed by the Speaker The study committee would investigate the status of the older age group with respect to the manpower potential and the basic problems of this group in the fields of employment, health, education, and community services, and the federal government s responsibilities It is identical with H Res 238 (previously reported)

The summary of federal legislation was prepared by the Washington Office of the American Medical Association

MEDICAL NEWS

ARIZONA

Psychotherapy Meeting—The Coconino County Medical Society is sponsoring a regional meeting of the five northern county medical societies at Grand Canyon Oct 3 The entire program will deal with psychotherapy in general medicine In formal round table discussions will follow brief presentations by guest speakers Dr Hale F Shirley from the Stanford University School of Medicine, San Francisco, and Dr Henry Cyril Schumacher, regional consultant in mental hygiene and psychiatry in the United States Public Health Service Dr Clarence G Salsbury of the state health department will act as moderator

CALIFORNIA

Personal.—Dr Edward S Rogers, professor of public health and medical administration on the Berkeley campus of the University of California, has been appointed a member of the Expert Advisory Panel on Health Statistics of the World Health Organization

Postgraduate Symposia on Heart Disease—These programs, scheduled for Oct 19-20 at the Wilshire Ebell Theatre in Los Angeles and Oct. 24-27 at the St Francis Hotel, San Francisco, are sponsored by the San Francisco and Los Angeles heart associations and are coordinated by the California Heart Association The programs will include courses in unipolar electrocardiography and heart disease in childhood There will be panel discussions on cardiac auscultation, medical and surgical aspects of correctable cardiovascular lesions, and arteriosclerosis and its sequelae The guest speakers will be Dr Dickinson W Richards Jr., New York, Lambert Professor of Medicine, Columbia University College of Physicians and Surgeons, who will speak on Mitral Commissurotomy Indications for Surgery and Measurements of the Circulation Before and After Operation," and Dr Howard B Sprague, Boston, immediate past president of the American Heart Association, also clinical associate in medicine at Harvard Medical School, whose subject will be 'Resistive Congestive Failure"

FLORIDA

State Cancer Council—A seven man Cancer Control Committee has been formed to unify and help direct cancer control activities in Florida Representing the Florida Medical Association are Drs Frazier J Payton, Miami, and Dr George W Morse, Pensacola, representing the State Board of Health, Drs Wilson T Sowder and Lorenzo L Parks, Jacksonville, representing the American Cancer Society, Drs Ashbel C Williams, Jacksonville, and Dr C Frank Chunn, Tampa, and representing the American College of Surgeons Dr Duncan T McEwan, Orlando

ILLINOIS

State Distribution of Biological Preparations.—Enough biological preparations to protect more than 1½ million persons against illnesses of various types were distributed by the Illinois State Department of Public Health during the fiscal year ending June 30 This total includes smallpox vaccine for more than 400,000 persons, diphtheria toxoid for 325,000 persons, tetanus toxoid for 315,000, whooping cough vaccine for 240,000, typhoid vaccine for 145,000, and rabies vaccine for 3,426 Enough silver nitrate was distributed to treat the eyes of every baby born in the state A large volume of biologicals for testing purposes was also provided, including tuberculin for testing 400 000 persons and Schick testing material for more than 265,000 persons This entire program of distribution of biologicals cost $223,777, or about 2½ cents per person in Illinois.

Chicago

Health Court Created.—A health court specializing in violations of the antiragweed ordinance was established Sept 4 by Chief Justice Edward S Scheffler of the municipal court, to expedite the city's fight against hay fever The court will operate on a full time basis during the hay fever season and will be revived each summer Heavy fines will be levied against property owners failing to cooperate with city officials in cutting ragweed twice a year on vacant property On Aug. 27 the city building department had 800 complaints awaiting trial and was making property title searches on 1,000 other complaints.

Army Testing Primaquine for Malaria—Dr Alf S Alving professor of medicine in the University of Chicago, is flying to Tokyo to direct an Army confirmatory test of the curative value of the anti malaria drug primaquine on returning Korean veterans Primaquine, newly developed synthetic, was extensively tested on volunteer prisoners at the Stateville, Ill, penitentiary by Dr Alving in a program made possible by the cooperation of Warden Joseph Ragen In this and subsequent studies the drug was highly effective as a malaria cure Although the Army has successfully controlled malaria in Korea with suppressive drugs, a considerable number of returned veterans have relapsed after the suppressive drugs have been withdrawn Dr Alving will test the curative effects of primaquine in veterans being rotated home and will study reactions to the drug

Museum Medical Lectures.—The fall lecture series at the Museum of Science and Industry is presented with the cooperation of the medical committee for the museum appointed by the University of Illinois The lectures are scheduled for each Sunday afternoon at 3 o clock, Sept 16 through Oct 21 as follows

Sept. 16 Hay Fever Cause and Treatment Harry L Huber University of Chicago
Sept. 23 Heart Disease Public Enemy No 1 Frederick W Fitz, Northwestern University
Sept 30 Rehabilitation of the Crippled William J Schnute Illinois Association of the Crippled
Oct 7 In Search of the Soul Percival Bailey University of Illinois
Oct 14 Overweight Nutrition and Health Robert W Keeton University of Illinois.
Oct 21 Modern Miracles in Medicine Austin Smith Editor THE JOURNAL.

KANSAS

Authentic McDowell Painting.—An original early American portrait of Dr Ephriam McDowell, the first ovariotomist, has been acquired by the Clendening Library of Medical History at the University of Kansas, Kansas City This oil painting, which was done by William Davenport in Danville, Ky, in 1829 just two years before the death of Dr McDowell, came to Missouri with the doctor's descendants in 1858 Within the past two years, it was rediscovered in the home of the late Dr Cyrus Cantrell of Kansas City, who had been feted as the leading general practitioner of 1949 in the greater Kansas City area After the doctor s death early in 1951, Mrs Cantrell gave the portrait to the Clendening Library The authenticity of this painting is accepted by Dr Lewis J Moorman, Oklahoma physician, in his recently published autobiography, 'Pioneer Doctor' A more recent copy of this portrait hangs over the mantelpiece of McDowell's Danville home which has been restored as a shrine by the Women s Auxiliary of the Kentucky State Medical Association

KENTUCKY

Grant for Study on Poliomyelitis—Dr Alexander J Steigman professor of child health at the University of Louisville School of Medicine, is the recipient of a $23,635 grant in aid from the National Foundation for Infantile Paralysis Inc for studies on experimental poliomyelitis

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Physicians are invited to send to this department items of news of general interest for example those relating to society activities new hospitals education and public health. *Programs should be received at least three weeks before the date of meeting*

LOUISIANA

Personal—Dr William A Sodeman, chairman since 1946 of the department of tropical medicine and public health in the Tulane University of Louisiana School of Medicine, New Orleans, has been awarded a Fulbright lectureship grant at the Calcutta, India, school of tropical medicine Teaching both clinical and tropical medicine, Dr Sodeman will remain at the Calcutta school for one year

Dr Harris to Head Physiology Department—Dr A Sidney Harris of Baylor University College of Medicine, Houston, Texas, has accepted an appointment as professor of physiology and chairman of the department of physiology at Louisiana State University College of Medicine, New Orleans Dr Harris has been associate professor of physiology at Baylor since 1947 He assumed his new duties Sept 1

MARYLAND

Personal.—Dr George A Silver, health officer of the Baltimore City Health Department since 1948, has been appointed full-time chief of the division of social medicine at Montefiore Hospital for Chronic Diseases, New York

Library Gets Cullen Papers—The collected papers, manuscripts, and published texts of Dr Thomas S Cullen, emeritus professor of gynecology at Johns Hopkins University School of Medicine, Baltimore, have been deposited in the Enoch Pratt Free Library, Baltimore Dr Cullen has been a library trustee since 1915 and president of the board since 1938 The papers, representing 60 years of work, are considered by Richard Hart, head of the literature department, to be of extreme value to students of medical history, particularly in gynecology" Dr Cullen has been associated with Johns Hopkins since 1891 when he was assistant to the late Dr Howard A Kelly

MASSACHUSETTS

Hospital News—Ground was broken July 11 for the new 7 million dollar St Vincent Hospital to be built in Worcester and operated by the Sisters of Providence The seven story 400 bed hospital and adjoining convent are expected to be complete in two years when the present hospital will be remodeled for the care of the chronic sick and for specialized maternity service

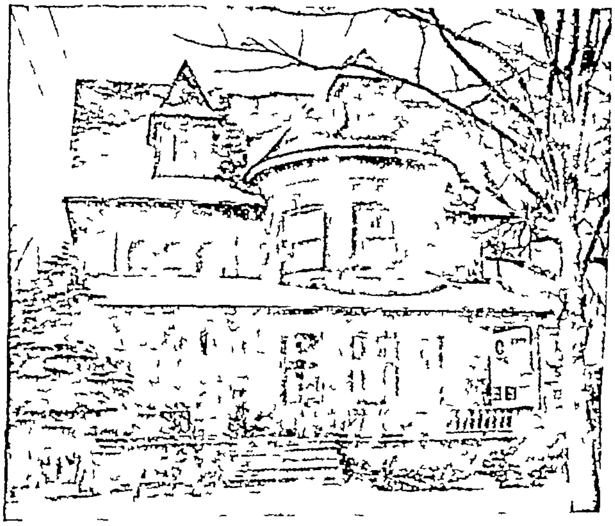
Industrial Physicians' Meeting—Handling of radioactive materials in industry and the employment of the mentally and emotionally maladjusted and the orthopedically handicapped are the problems to be considered by industrial physicians meeting at the Hotel Bradford in Boston, Oct 17, under the auspices of the Committee on Industrial Health of the Massachusetts Medical Society More than 300 industrial physicians are expected to attend

MICHIGAN

Hospital Dedicated—The new 2 million dollar Memorial Hospital in St Joseph was dedicated July 22, climaxing five years of planning, fund raising, and construction The 104-bed hospital erected through about 3,500 contributions from business firms and individuals in the community, was dedicated as a memorial to the men of the St Joseph area who gave their lives in World War II. The hospital is managed by a nonprofit organization known as the St Joseph Benton Harbor Memorial Hospital Association, made up of men of the area representing practically every walk of life in the community

Cancer Conference—The third Michigan Cancer Conference will be held Oct 12 at the W K. Kellogg Center for Continuing Education on the campus of Michigan State College, East Lansing It will immediately follow the Annual Training School of the Michigan Division American Cancer Society, and will be co sponsored by the two Michigan Divisions of the American Cancer Society, the Michigan Department of Health and the Michigan State Medical Society The general theme of the conference will be individual participation in cancer control Mrs Marjorie Karker of the Michigan Farm Bureau will speak on "Rural Organizations and the Cancer Problem," and Dr Madge Thurlow Macklin, Columbus, Ohio, will discuss the 'Place of Heredity in Cancer Development" Other conference subjects and speakers will be "Home Care of Cancer Patients Nursing Problems" by Miss Hulda Edman, cancer nursing specialist of the Detroit Visiting Nurse Association, Home Care of Cancer Patients Psychiatric Problems' by Dr Henry H Sadler, Grosse Pointe, and "Cancer Education in the Schools" by Dr Frank L. Rector, secretary, Cancer Control Committee, Michigan State Medical Society, who has been supervising the cancer educational program in several Michigan high schools All statewide health minded organizations have been invited to send representatives to this meeting In addition, anyone interested in cancer control will be welcome

State Society Purchases New Home.—Executive offices of the Michigan State Medical Society in Lansing, have been moved to a new location, according to an announcement made by Dr L. Fernald Foster, Bay City, secretary The move was made in late July from the Olds Tower, an office building in downtown Lansing, to a large three story house at 606 Townsend St, located a few blocks from the downtown area The society purchased the house when the rapidly expanding executive staff outgrew its old quarters



New headquarters for the State Medical Society

MISSOURI

Fall Clinical Conference.—This annual conference of the Kansas City Southwest Clinical Society will be held Oct 1-4 in the Municipal Auditorium, Kansas City Guest speakers, together with one of their subjects, are as follows

Alfred W Adson Rochester Minn Indications for and the Evaluation of Operations Employed in the Treatment of Malignant Hypertension.

Edward F Bland Boston Course and Complications of Rheumatic Heart Disease with Special Reference to Management.

John W Cline San Francisco The Responsibility of the Individual Physician

Warren H Cole Chicago Intestinal Obstruction.

Mims Gage New Orleans, Malignant Melanoma

Ross Golden New York Problem of Carcinoma of the Stomach

Verne R. Mason Beverly Hills Calif Pulmonary Fibrosis

William F Mengert Dallas Texas Trends in Diagnosis and Treatment of Cervical Carcinoma

Harold A O Brien Dallas Texas Carcinoma of the Prostate

Herman E Pearse Rochester N Y Peripheral Vascular Diseases.

H Marvin Pollard Ann Arbor Mich Modern Therapy for Gastroduodenal Ulcer

Heyworth N Sanford, Chicago Anemias of Childhood

George Saslow St Louis Relation Between Personality and Some Gastrointestinal Disorders

John R Schenken Omaha Pathologic Lesions in the Heart in the Common Types of Heart Disease

Isaac S Tassman Philadelphia Ocular Manifestations in Diseases of the Vascular System

Edward B Tuohy Washington D C. Anesthetic Emergencies and Their Management

The program also includes a clinical pathologic conference and medical and surgical round table discussions daily at luncheons Scientific and technical exhibits will be shown

NEW YORK

Postgraduate Lecture.—Dr Arthur C DeGraff New York, will speak on 'Modern Trends in the Management of Heart Failure at a meeting of the Onondaga County Medical Society at 8 30 p m. Oct. 2 at the University Club in Syracuse This lecture is provided by the Medical Society of the State of New York in cooperation with the New York State Department of Health

State Health Department Fellowships.—The New York State Department of Health is offering fellowships in public health to young physicians interested in public health as a career Completion of the required training qualifies the physician for a full time public health position in New York State Field and academic training are the two main constituents of the fellowship program Field training for one year is obtained in a residency in public health with the state health department Academic training consists of one year at an approved school of public health Usually six months field training is required before assignment to such a school The fellowship is for 24 months or less depending on the qualifications of the fellow at the time of beginning training Appointment can be made at any time during the year The monthly stipend allowed during the field training is $350 During the academic training it is $350 per month for fellows with dependents and $200 for those without dependents In addition, authorized travel, other necessary expenses, and tuition to the school are paid On completion of training the physician is expected to accept a public health position in New York State Further details and applications may be obtained from the Office of Professional Training New York State Department of Health, Albany 1

New York City

Child Guidance Conference.—The Bureau of Child Guidance of the Board of Education in New York City schools will hold an all-day 20th anniversary conference Oct 27 at the Hotel Astor Seven panel meetings will make up the morning session and will deal with various phases of Child Guidance in a Changing World Panel subjects are The Clinical Approach to Children s Problems Fear of School, The Adolescent Today, The Teacher in the Mental Health Team The Contribution of Mental Hygiene to Parenthood Education for Emotional Maturity, and Mental Hygiene in High Tension Areas The program is open to professional personnel teachers and parents

Pediatric Research Grants.—Four additional pediatric research grants have been made by the Playtex Park Research Institute A three year $15,000 grant has been made to the New York University Bellevue Medical Center for studies of amino acid metabolism with particular reference to the influence of adrenal and adrenotrophic hormones Studies of blood vessel grafts and vascular shunts in pediatric surgery will be carried out under a three year $18 000 grant to Montefiore Hospital for Chronic Diseases The studies will be aimed particularly at the correction of congenital and acquired lesions of the heart and blood vessels the permitting of a more aggressive approach to removal of tumors, both benign and malignant and the increasing of the blood supply to organs impaired either organically or functionally A study of the status at birth and the developmental pattern of kidney function in normal infants and in those with renal or metabolic disorders will be made at the Cornell University Medical College during the next three years under a $15,000 grant from the institute Hormonal control of water and electrolyte balance in premature infants older infants and children will be carried out during the next two years by the department of pediatrics and pharmacology College of Physicians and Surgeons Columbia University, under a $10 000 grant from the institute The institute was founded a little more than a year ago and has made 12 previous grants for pediatric research

PENNSYLVANIA

Survey of Emergency Medical Service.—Fifty four areas in Pennsylvania are now covered by 24-hour emergency medical service according to the latest survey made by the Medical Society of the State of Pennsylvania These areas include the entire counties of Philadelphia Allegheny Lackawanna Adams, Dauphin, and Delaware, and such cities as Erie, Altoona, Johnstown, Lancaster, and Pottsville In addition 25 counties now have some type of emergency medical call service The oldest service is that of Philadelphia which has had its Physicians and Surgeons Exchange for 30 years Many rural and semi rural areas, the society's survey reveals, do not need emergency medical call service The few residents of these areas use the services of their own family doctors who are available and willing to respond to call when needed

State Medical Meeting.—Pittsburgh will be host to more than 2 000 physicians when the annual session of the Medical Society of the State of Pennsylvania meets at the William Penn Hotel Sept 16 20 A total of 125 physicians will address the scientific sessions on diagnostic and therapeutic advances in all phases of medicine Twenty guest speakers from New York, Chicago Boston and St Louis will take part Dr John W Cline San Francisco President and Dr W W Bauer, Chicago Director of the Bureau of Health Education American Medical Association will discuss sociomedical problems of the medical profession Technical and scientific exhibits will be shown The Benjamin Rush Awards will be presented at the state dinner on Monday to the lay individual and the lay organization which have been judged as contributing most to the health of Pennsylvania during the past year Dr Louis W Jones Wilkes Barre will be installed as president of the society for the ensuing year The Woman's Auxiliary will meet at the Roosevelt Hotel

Philadelphia

Dr Buerki Goes to Detroit.—Dr Robin C Buerki has resigned as vice president in charge of medical affairs at the University of Pennsylvania to become executive director of the Henry Ford Hospital Detroit He will assume his duties Oct 1 Dr Buerki will succeed Dr Roy D McClure who died March 31

TENNESSEE

Postgraduate Medical Assembly.—The Nashville Academy of Medicine will present its postgraduate medical assembly at the Maxwell House Hotel Oct 3-5 Out of state speakers include the following

Michael L Mason Chicago Prevention and Treatment of Infections of the Hand
Warren W Quillian Coral Gables Fla Pyurias in Childhood
M Edward Davis Chicago Modern Management of the Placental Stage and Postpartum Hemorrhage
Edgar Hull New Orleans Cardiac Emergencies and Their Management.
Keith S Grimson Durham N C Use of Sympatholytic and Parasympatholytic Drugs
Harold A O'Brien Dallas Bladder Irritation in Women
A McGehee Harvey Baltimore The Current Status of ACTH and Cortisone in Medical Practice
Robert J Crossen St Louis Gynecological Problems of Interest to the General Practitioner
John Martin Chicago Neurosurgical Procedures for the Relief of Intractable Pain
Tinsley R Harrison Birmingham Ala Practical Aspects of Palpitation
Jack G Kerr Dallas Management of Some Minor Anorectal Lesions

Dedicating Ceremonies.—Seven medical scientists will be on the program when the University of Tennessee College of Medicine holds a dedication ceremony in Memphis Oct 4 The observance will mark the completion of the new Cancer Research Laboratory and the six story Institute of Pathology, a $4 800 000 building program to be launched soon, and the centennial of continuous medical education in Tennessee Speakers in the morning session, to be held in the auditorium of the Institute of Pathology adjacent to John Gaston Hospital, are Dr Robert A Moore, dean of Washington University School of Medicine, St Louis Alan T Waterman Ph D director of the National Science Foundation, Washington, D C and Dr Leonard A Scheele Surgeon General, United States Public Health Service Washington Dr Moore will speak on "The Place of Pathology in Medical Education" The role a national foundation plays in the progress of medicine will be discussed by Dr Waterman, and Dr Scheele will speak on the part that government agencies play in medical research Speakers on the afternoon program will be Dr Cornelius P Rhoads director of the Memorial Center for Cancer and Allied Diseases, New York, whose topic will be "Recent Advances and Future Possibilities of Cancer Research", Dr Henry K. Beecher, professor of research in anesthesia at Harvard Medical School, Boston, who will discuss effects of wounds on the circulation, and Dr Edward A Doisy, director of the biochemistry department of Saint Louis University School of Medicine, who will speak on "Some Aspects of Steroid Metabolism" Dr John W Cline, San Francisco, President of the American Medical Association, will deliver the principal address at an evening session at the Peabody Hotel He will discuss the course medical education should take in the immediate future

WEST VIRGINIA

Broadcasts on Venereal Disease.—Transcriptions of broadcasts on the control of venereal disease, which will be featured each Monday from 10 30 to 11 00 p m over station WTIP, Charleston, will be made available for use on all radio stations in West Virginia. The 14-week series will begin Sept 10 The first 15 minutes of each broadcast will consist of a drama, the last 15 minutes will include a timely talk by personnel from the state department of health, local health officers, doctors in practice in the state, county superintendents of schools, and ministers A question and answer period will conclude each program The final broadcast will include a panel discussion with program participants appearing The series is made possible by the Charleston Chapter of the Council of Jewish Women in cooperation with the state department of health

Rural Health Conference.—The fourth annual rural health conference, sponsored by the West Virginia State Medical Association, will be held at Jackson s Mill Sept 28 The theme for the conference will be community health councils The program will include addresses by speakers of state and national reputation, and a panel discussion following the afternoon program will be led by Dr John F McCuskey of Clarksburg and Dr Paul L McCuskey of Parkersburg, co-chairmen of the state public relations committee The meeting will be attended by representatives of the agricultural extension service of West Virginia University, the state grange, farm bureau, farm women s council, state health department, West Virginia University School of Medicine, and other state groups Those attending the conference will be guests of the state medical association at a luncheon in the Mount Vernon dining hall

WISCONSIN

Waupun Memorial Hospital—This 60 bed hospital, built without federal aid was opened early in July The School Sisters of St Francis with headquarters in Milwaukee took over the $1,750,000 project It is to be operated as a public hospital and is a memorial to the service men and women of both World Wars The towns of Alto and Chester also contributed to the construction

State Chest Physicians Meeting—The Wisconsin chapter of the American College of Chest Physicians will meet at the Hotel Schroeder the afternoon of Sept 30 preceding the meeting of the State Medical Society of Wisconsin Visiting speakers include the following

Jay A Myers Minneapolis Primary Tuberculosis in Adults
Chevalier L Jackson Philadelphia Significance of the Bronchopulmonary Segments
Burgess L Gordon Philadelphia Physiological Considerations in the Diagnosis and Management of Chronic Pulmonary Diseases

GENERAL

Southeastern Surgical Congress—The northeastern section of the Southeastern Surgical Congress met at the Lord Baltimore Hotel in Baltimore Sept 13 15 The program included a panel discussion on the effect of prostatectomy on hypertension, the discussions being presented by Dr Austin I Dodson, Richmond, Va , and Drs Alan J Chenery and James W Choate, Washington, D C A series of 18 papers was read

Pathologists Get Standardized Testing Solutions.—Greater accuracy in laboratory diagnosis is expected from a service recently announced by the College of American Pathologists The college is initiating a program enabling pathologists who direct laboratories to obtain highly standardized chemical solutions for use in performing tests on body fluids By checking solutions prepared by their own technicians against the standard solutions supplied them, laboratory directors can increase the reliability of their medical tests, to the immediate benefit of the sick. Distribution of standardized dextrose and nitrogen solutions to 1,450 member pathologists, which began Aug 30, marks the initial step in the development of a comprehensive program for standardization of laboratory procedures

Life Insurance Medical Directors Meeting.—The Association of Life Insurance Medical Directors of America will convene Oct 11-12 at the Hotel Statler in New York under the presidency of Dr Lauritz S Ylvisaker of Philadelphia Guest speakers include the following

Philip S Hench Rochester Minn. Cortisone and ACTH
Francis R Dieuaide New York, Progress in Cardiovascular Research.
Harold M Marvin New Haven Conn Chest Pain
Herman E Hilleboe Albany N Y Public Health and Civil Defense.
Franz J Ingelfinger Boston Benign Gastrointestinal Conditions
Thomas M Durant Philadelphia Dietary Factors in Arteriosclerosis.
Howard M McCue Jr Richmond Va Control of Rheumatic Heart Disease

U.S P XIV Supplement—A copy of the third United States Pharmacopeia XIV Supplement will be mailed to every registered holder of U S P XIV, according to Lloyd C Miller, Ph D , director of Pharmacopeial Revision Registry is effected by returning the card bound into the back of U S P XIV This automatically assures receiving a copy of every supplement issued, at no charge As yet cards have not been returned for several thousand of the copies of U S P XIV known to be in circulation Considerable effort is being made to draw attention to the obligations of each owner in regard to returning the card and to keeping the U S P office advised of any change in address All presently registered holders of U S P XIV should have received their copies of the supplement during August This allows time for study and for making changes to comply with the new regulations before they go into effect on Jan 1, 1952

Dietetic Association Meeting—The American Dietetic Association will hold its annual meeting Oct 9 12 at the Public Auditorium in Cleveland Approximately 4,000 dietitians, nutritionists, and guests are expected to attend Some of the speakers scheduled to appear on the program and their topics include the following

Fredrick J Stare Boston Recent Advances in Nutrition
George J Hamwi Columbus Ohio Studies in Geriatric Nutrition
Howard B Lewis Ph D Ann Arbor Mich Fifty Years of Study of the Role of Protein in Nutrition
Iago Galdston New York Nutrition from the Psychiatrist s Point of View
Robert R Williams New York Rice as a Factor in Asiatic Diets
Dena Cederquist Ph D East Lansing Mich Weight Reduction on a High Fat Diet
Ralph D Rabinovitch Ann Arbor Mich Feeding to Meet Emotional Needs.

Other sessions will be devoted to institution management, professional education, and public health

Maxillofacial Surgeons Meeting—The annual meeting of the American Society of Maxillofacial Surgeons will be held at the Drake Hotel Chicago, Sept 23 26, under the presidency of Dr John B Erich Rochester, Minn Those speaking by invitation include the following

Karl Meyer Chicago Primary Carcinoma of Neck
James W Hendrick San Antonio Texas, Head and Neck
Eric Oldberg Chicago Cranial Complications of Facial Injuries

There are three symposiums on the program First, a symposium on cancer given Monday morning, the participants being Drs George Milles, Irvin F Hummon, and Eric M Uhlmann, Chicago, Dr John B Erich, Rochester, Minn., and Dr Hamilton A Baxter Montreal, Canada The second symposium will be presented Tuesday afternoon on treatment of burns of the face Participants will be Dr Joseph G Kostrubala, Chicago, and, by invitation, Drs Derrick T Vail and Louis Schultz, Chicago and Dr Clarence R Straatsma, New York The meeting will close Wednesday morning with a symposium on cleft palate and lip Speakers will be Dr Carl W Waldron, Minneapolis, Dr John W Kemper, Ann Arbor, Mich , Dr Fred S Dunn, New York, and, by invitation, Dr Edward A Kitlowski, Baltimore

Parents' Guide to Cerebral Palsy.—How parents of children with cerebral palsy can help in developing services for these children is one of the important activities described in the new 76-page "Parents' Study Guide" published in July by the National Society for Crippled Children and Adults The booklet was prepared in answer to many requests for help in forming a parents' group, planning a program for parent study, and assisting in building programs for children The Program Study Outlines for 19 meetings cover specific phases of treatment, training, education, counseling, and other areas of interest with accompanying lesson outlines and source materials The role of parents as members of the cerebral palsy team, and the projects they can assist in carrying on, are also listed A bibliography of pamphlets, magazines and books for parents of handicapped children and a listing of organizations which publish and distribute literature for child care and guidance and family living are included In addition to professional guidance in preparing the booklet, the national society also received assistance from members of the National Cerebral Palsy Parents' Advisory Council Because part of the publishing costs were defrayed through a grant, special prices on the booklet are being offered For one to 25 copies, the cost is 50 cents each, 26 to 100 copies, 45 cents each, and more than 100 copies, 40 cents each Copies are available from the National Society for Crippled Children and Adults, 11 S LaSalle St Chicago 3

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated

Area	Sept 1 1951	Aug 25 1951	Sept 2, 1950
New England States			
Maine	4	4	3
New Hampshire	2	3	
Vermont		5	1
Massachusetts	13	21	33
Rhode Island		3	5
Connecticut	34	20	32
Middle Atlantic States			
New York	119	100	[illegible]
New Jersey	45	32	34
Pennsylvania	54	46	49
East North Central States			
Ohio	74	83	98
Indiana	18	27	18
Illinois	128	90	122
Michigan	98	85	114
Wisconsin.	104	107	[illegible]
West North Central States			
Minnesota	35	48	27
Iowa	33	38	95
Missouri	64	55	16
North Dakota	5	7	1
South Dakota	14	4	7
Nebraska	37	32	16
Kansas	52	63	[illegible]
South Atlantic States			
Delaware	1		3
Maryland	16	5	37
District of Columbia	6	14	15
Virginia	19	10	48
West Virginia	19	12	9
North Carolina	[illegible]	15	49
South Carolina	7	11	17
Georgia	36	47	14
Florida	9	13	17
East South Central States			
Kentucky	20	31	28
Tennessee	36	39	23
Alabama	24	54	8
Mississippi	31	[illegible]	13
West South Central States			
Arkansas	33	36	15
Louisiana	27	39	16
Oklahoma	27	34	19
Texas	0	[illegible]	102
Mountain States			
Montana	11	6	3
Idaho	[illegible]	[illegible]	8
Wyoming	[illegible]	15	
Colorado	[illegible]	114	7
New Mexico	9	14	5
Arizona	[illegible]	25	11
Utah	39	33	
Nevada		1	
Pacific States			
Washington	23	17	41
Oregon	13	11	16
California	145	133	65
Territories and Possessions			
Alaska	4	1	
Hawaii..			
United States	1 746	1 771	1 625

DEATHS IN OTHER COUNTRIES

Dr George Grey Turner, emeritus professor of surgery at the universities of Durham and London, died in London Aug 24 aged 73 He was a member of the council of the Royal College of Surgeons of England from 1926 to 1950 In 1949 he presided over the 13th congress of the International Society of Surgeons in New Orleans Among the notable lectures he had given in this country were his oration at the clinical congress of the American College of Surgeons in Philadelphia in 1930, his Prosser White Oration in 1939, the George Halliburton Hume Memorial Lectures in 1943, and in 1949 the Moynihan Memorial Lecture Among his publications are Injuries and Diseases of the Oesophagus" In addition, he wrote several treatises on cancer

MEETINGS

American Fracture...

American Academy of Ophthalmology and Otolaryngology Chicago Oct. 14-18 Dr W L Benedict 100 First Avenue Bldg. Rochester Minn Executive Secretary

American Academy of Pediatrics Toronto Canada Oct 20-25 Dr E H Christopherson 636 Church St Evanston Ill Executive Secretary

American Association for the Surgery of Trauma The Seigniory Montebello Quebec Canada Oct. 23-25 Dr Charles G Johnston 1512 St. Antoine St Detroit 26 Secretary

American Association of Blood Banks Hotel Nicollet Minneapolis Oct. 22 24 Miss Marjorie Saunders 3301 Junius St Dallas 1 Texas Secretary

American Cancer Society New York Oct. 25 Dr Charles S Cameron 47 Beaver St New York Medical Director

American Clinical and Climatological Association Skytop Pa Nov 5-7 Dr Marshall N Fulton 124 Waterman St Providence R I Secretary

American College of Surgeons Fairmont Hotel San Francisco Nov 5 9 Dr Michael L Mason 40 E Erie St. Chicago 11 Secretary

American Hospital Association St. Louis Sept. 17 20 Mr George Bugbee 18 E. Division St Chicago 10 Executive Director

American Medical Writers Association Pere Marquette Hotel Peoria Ill Sept. 19 Dr Harold Swanberg 209 W C U Bldg. Quincy Ill Secretary

American Public Health Association Civic Auditorium San Francisco Oct 29 Nov 2. Dr Reginald M Atwater 1790 Broadway New York 19 Executive Secretary

American Roentgen Ray Society Washington D C Sept 25 28 Dr Barton R. Young Germantown Hospital Philadelphia 44 Secretary

Amercan Society for the Study of Arteriosclerosis Chicago Nov 4-5 Dr O J Pollak Quincy City Hospital Quincy 69 Mass Secretary

American Society of Anesthesiologists Washington D C Nov 5-8 Dr J Earl Remlinger Jr 188 W Randolph St. Room 909 Chicago 1 Secretary

American Society of Clinical Pathologists Chicago Oct. 15 20 Dr Clyde G Culbertson 1040 W Michigan St. Indianapolis 7 Secretary

American Society of Maxillofacial Surgeons Drake Hotel Chicago Sept. 23 26 Dr Casper M Epsteen 25 E Washington St Chicago 2 Secretary

Association of American Medical Colleges French Lick Springs Hotel French Lick Ind Oct. 29 31 Dr Dean F Smiley 185 N Wabash Ave Chicago 1 Secretary

Association of Life Insurance Medical Directors of America New York Oct 11 12. Dr Henry B Kirkland P O Box 594 Newark 1 N J Secretary

Association of Military Surgeons of the United States Palmer House Chicago Oct. 8 10 Colonel James M Phalen Armed Forces Institute of Pathology Washington 25 D C Secretary

Central Neuropsychiatric Association Hotel Nicollet Minneapolis Oct 19 20 Dr Lee M Eaton 102 Second Ave S W Rochester Minn. Secretary

Central Society for Clinical Research Drake Hotel Chicago Nov 2 3 Dr Kenneth G Kohlstaedt 960 Locke St Indianapolis 7 Secretary

College of American Pathologists Chicago Oct. 15 16 Dr Tracy B Mallory Massachusetts General Hospital Boston Secretary

Colorado State Medical Society Denver Sept 18 21 Mr Harvey T Sethman 1612 Tremont Place Denver 2 Executive Secretary

Delaware Medical Society of Wilmington, Oct 8 10 Dr Andrew H. Gehret 1007 Park Place Wilmington, Secretary

District of Columbia Medical Society of the Hotel Statler Washington Oct. 1 3 Mr Theodore Wiprud 1718 M St. N W Washington Secretary

Gulf Coast Clinical Society Edgewater Gulf Hotel Edgewater Park, Miss Oct. 18 19 Dr C D Taylor 113 Davis Ave Pass Christian, Miss Secretary

Indiana State Medical Association Indianapolis Oct 29 31 Miss Lucille Kribs 23 E Ohio St Indianapolis 4 Acting Secretary

Interstate Post Graduate Medical Association of North America, St Louis Oct. 22 26 Dr Tom B Throckmorton Equitable Bldg. Des Moines Iowa Secretary

Kansas City Southwest Clinical Society Municipal Auditorium Kansas City Mo Oct. 1-4 Dr Maxwell G Berry 630 Shukert Bldg Kansas City Mo *Director of Clinics*

Kentucky State Medical Association Columbian Auditorium Louisville Oct 2 5 Dr Bruce Underwood 620 S Third St Louisville 2 Secretary

Michigan State Medical Society Grand Rapids, Sept. 26-28 Dr L. Fernald Foster 606 Townsend St. Lansing 15 Secretary

Midwest Regional Meeting American College of Physicians, Columbus Ohio Oct. 13 Dr B K Wiseman Kinsman Hall Ohio State University Columbus 10 Ohio Chairman

Mississippi Valley Medical Society Peoria Ill Sept. 19 21 Dr Harold Swanberg 510 Maine St. Quincy Ill Secretary

Nashville Postgraduate Medical Assembly Maxwell House, Nashville, Tenn Oct. 3 5 Dr W G Kennon Jr 647 Doctors Bldg Nashville 3, Secretary

New Hampshire Medical Society Equinox House Manchester Vermont, Sept. 30-Oct 2 Dr Deering G Smith 44 Chester St. Nashua Secretary

North Texas-Southern Oklahoma Fall Clinical Conference, Wichita Falls Texas Sept. 19 Dr W L. Powers 517 Hamilton Bldg. Wichita Falls Chairman.

Oklahoma City Clinical Society *Biltmore Hotel Oklahoma City Oct. 29* Nov 1 Mrs Muriel R Waller 612 Medical Arts Bldg Oklahoma City Executive Secretary

Omaha Mid West Clinical Society Hotel Paxton Omaha Oct 29 Nov 2 Dr L E. Moon 1031 Medical Arts Bldg Omaha 2 Secretary

Oregon State Medical Society Masonic Temple Portland Oct. 10-13 Dr Robert F Miller 833 S W Eleventh Ave Portland 5 Secretary

Pennsylvania Medical Society of the State of Pittsburgh Sept 16-20 *Dr Walter F Donaldson 500 Penn Ave Pittsburgh 22 Secretary*

Southern Medical Association Dallas Texas Nov 5 8 Mr C. P Loranz, 1020 Empire Bldg Birmingham 3 Ala Secretary

Southwestern Medical Association El Paso Texas Oct 18-20 Dr W W Schuessler 1415 First National Bank Bldg El Paso Texas Secretary

Southwestern Surgical Congress Hotel Jefferson St. Louis Sept 24-26 Dr C. R Rountree 1227 Classen St. Oklahoma City 3 Secretary

Vermont State Medical Society Equinox House Manchester Sept 30-Oct. 2 *Dr James P Hammond 542 Main St Bennington Secretary*

Virginia Medical Society of Virginia Beach Oct. 7 10 Mr Richard H. Nash 1105 W Franklin St Richmond Executive Secretary

Wisconsin State Medical Society of Hotel Schroeder and Milwaukee Auditorium *Milwaukee Oct. 1 3 Mr Charles H Crownhart* 704 E Gorham St Madison 3 Secretary

Wyoming State Medical Society Rock Springs Sept. 27 29 Dr Glenn W Koford 2020 Carey Ave. Cheyenne Secretary

INTERNATIONAL

Commonwealth and Empire Health and Tuberculosis Conference Central Hall London England July 8-13 Dr J H. Harley Williams Tavistock House North Tavistock Sq London W C 1 England Secretary General

European Congress of Hematology Rome Italy Oct 3-6 Dr Sven Moeschlin Mediz Klinak Zurich Switzerland General Secretary

European Congress on Rheumatism Barcelona Spain, Sept. 24-27 Dr Gunnar Edströn Lund Sweden Secretary

Inter American Congress of Surgery Buenos Aires Argentina Oct. 1-6

International Association of Allergists Zurich Switzerland Sept 23 29 Prof A. S Grumbach Hygiene Institut der Universitaet Zurich Gloriastr 32 Zurich Switzerland

International Congress of Anesthesiology Nursing School of the Salpietre 47 Boul de l Hospital Paris France, Sept 20-22. 12 rue de Seine Paris 6 France Secretariat.

International Congress on Mental Health, Mexico City Mexico Dec 11 19 *Mrs. Grace E* O Neill Division of World Affairs National Association on Mental Health 1790 Broadway New York 19 N Y

International Congress of Physical Medicine London England July 14-19 Dr A C Boyle, 45 Lincoln s Inn Fields London W C.2 England Hon Secretary

International Society of Surgery Paris France Sept. 24-29 Dr L. Dejardin 141 rue Belliard Brussels *Belgium Secretary General.*

Pan American Congress of Ophthalmology Mexico City Mexico Jan. 6-12 Dr Luis Sanchez Bulnes Gomez Farias 19 Mexico 4 D F Secretary-General

Pan American Congress of Pediatrics Montevideo Uruguay Dec 5-8 Dr Maria Luisa Saldien de Rodriguez, Avenida 18 de Julio 1246 Montevideo Uruguay General Secretary

Pan Pacific Surgical Association Congress Honolulu Hawaii Nov 7 19 Dr Forrest J Pinkerton Suite 7 Young Bldg. Honolulu Hawaii President.

World Medical Association Stockholm Sweden Sept 15 21 Dr Louis H Bauer 2 E 103d St., New York 29 N Y U S A. *Secretary* General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama *Examination* Montgomery June 24-26 *1952* Sec, Dr D G Gill 537 Dexter Ave Montgomery 4

Arkansas * *Regular* Little Rock, Nov 8-9 Sec., Dr Joe Verser Harrisburg.

Colorado * *Reciprocity* Denver Oct. 9 Final date for filing application is Sept. 24 Ex. Sec. Mrs. Beulah H. Hudgens, *831* Republic Bldg. Denver 2

Georgia Atlanta, June August Oct. 9-11 Sec Mr R. C. Coleman, 111 State Capitol Atlanta.

Guam The Commission on Licensure will meet whenever a candidate appears or submits his credentials Ex. Sec Dr John Y Battenfield, Agana.

Illinois Chicago Oct 9 11 Superintendent of Registration Mr Charles *F Kervin* Capitol Building Springfield.

Indiana Indianapolis June 1952 Sec Dr Paul R. Tindall 1138 K of P Bldg. Indianapolis 4

Kansas Topeka Dec 12 13 Sec. Dr O W Davidson 772 New Brotherhood Bldg Kansas City

Kentucky *Examination* Louisville Dec. 11 13 Sec Dr Bruce Underwood 620 S 3rd St. Louisville

Maryland *Examination* Baltimore *Dec. 11 14 Sec Dr Lewis P* Gundry 1215 Cathedral St Baltimore.

Michigan * *Examination* Lansing Oct. 10-12. Sec Dr J Earl McIntyre, 202-4 Hollister Bldg Lansing.

Minnesota * Minneapolis Oct. 16-18 Sec. Dr Julian F DuBois 230 *Lowry Medical Arts* Bldg. *St Paul 2.*

Mississippi *Reciprocity* Jackson December Asst Sec., Dr R N Whitfield Old Capitol Bldg Jackson.

Missouri *Examination* Kansas City Oct. 18-20 *Reciprocity* Oct. 17 Exec Sec Mr John A Hailey State Capitol Bldg. Jefferson City

New Jersey *Examination*. Trenton Oct. 16-19 Sec. Dr E. S Hallinger 28 W State St Trenton.

New Mexico * *Santa Fe* Oct. 8-9 Sec. Dr Charles J McGoey Coronado Bldg Santa Fe.

New York *Examination* Albany Buffalo New York and Syracuse, Oct. 31 Nov 3 Sec. Dr Jacob L. Lochner Jr 23 S Pearl St. Albany

North Carolina *Examination*. Asheville Oct. 7-8 *Reciprocity* Asheville Oct. 8 Sec Dr Joseph J Combs, Professional Bldg Raleigh

Ohio *Examination* Columbus December *Reciprocity* Columbus Oct 2. Sec Dr H M Platter 21 W Broad St. Columbus 15

Oregon * *Reciprocity* Portland Oct. 12 13 *Examination* Portland Jan 1952. Ex Sec. Mr Howard I Bobbitt, 609 Failing Bldg., Portland.

South Carolina *Reciprocity* Columbia *Oct. 1* Sec Dr N B Heyward 1329 Blanding St., Columbia

South Dakota * *Examination* Sioux Falls, Jan 15 16 Ex. Sec Mr John C Foster 300 First National Bank Bldg. Sioux Falls

Virgin Islands Charlotte Amalie Nov 7-8 Sec Dr Earle M Rice St. Thomas

Wyoming *Examination* Cheyenne Oct. 1 Sec Dr Franklin D Yoder State Capitol Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Connecticut· *Examination* New Haven, *Oct 13 Exec Asst Miss Mary* G Reynolds State Board of Healing Arts 110 Whitney Avenue New Haven 10

District of Columbia *Examination* Washington Oct. 22 23 Sec Dr Daniel L Seckinger 4130 E. Municipal Bldg. Washington

Florida Gainesville Nov 10 Sec *Mr M W Emmel Box 340 University of Florida* Gainesville

Michigan Detroit *and* Ann Arbor Oct. 12 13 *Examination* Sec Miss Eloise LeBeau 501 W Michigan Ave Lansing 15

Minnesota *Examination* Minneapolis Oct. 2 3 Sec Dr Raymond N Bieter 105 Millard Hall University of *Minnesota Minneapolis.*

Nebraska *Examination* Omaha Oct. 2 3 Director Bureau of Examining Boards *Mr Oscar F* Humble Room 1009 State Capitol Bldg. Lincoln 9

Oregon *Examination* Portland Dec 1 Sec. Dr Charles D Byrne State Board of Higher Education University of Oregon Eugene

South Dakota *Examination*. Vermillion, Dec. 7-8 Sec Dr Gregg M Evans 310 E 15th St. Yankton

Texas *Examination* Austin *Oct 19 20* Chief Clerk Mr B H Kirk 306 Nalle Bldg Austin.

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* Basic Science *Certificate* required.

DEATHS

Sloan, Ruell Allen ⊕ Washington, D C , born in Hartford, Conn , July 31, 1908, University of Rochester School of Medicine and Dentistry, Rochester, N Y, 1935, specialist certified by the American Board of Pathology secretary treasurer of the American and Canadian sections of the International Association of Medical Museums, past vice president and president of the Washington Society of Pathologists, formerly secretary of the Pathological Society of the District of Columbia member of the American Association of Pathologists and Bacteriologists, College of American Pathologists, and the American Society of Clinical Pathologists, assistant in pathology, 1937-1938 instructor in pathology, 1938-1939 and from 1941 to 1942 at Harvard Medical School in Boston, at one time instructor and acting assistant professor of pathology at St. Louis University School of Medicine, assistant professor of pathology, University of Buffalo School of Medicine, during World War II served as executive officer of the Army Institute of Pathology formerly affiliated with Long Island and Children's hospitals in Boston, St Marys and Firmin Desloge hospitals in St Louis, and the Edward J Meyer Memorial Hospital in Buffalo, curator of the Medical Museum Department of the Armed Forces Institute of Pathology, died in his home in Chevy Chase, Md , June 17, aged 42.

Roper, Lonsdale Joseph ⊕ Richmond, Va , born in New York March 28, 1886, University College of Medicine, Richmond, 1907, since 1946 state health commissioner, in 1919 began his career in public health with the establishment of Portsmouth's first city health department, in 1937 became director of the venereal disease division of the state health department and the next year was put in charge of the department s rural health division, specialist certified by the American Board of Preventive Medicine and Public Health member of the Southern Medical Association and the Richmond Academy of Medicine, fellow of the American Public Health Association and past president of the State and Provincial Health Authorities of North America, served during World War I at one time assistant professor of preventive medicine and public health at the Medical College of Virginia, died June 12, aged 65, of coronary thrombosis

Martin, Harry Watson ⊕ Los Angeles, born in Redfield, S D , Jan 18, 1890, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1912 husband of Columnist Louella O Parsons member of the American Urological Association, fellow of the American College of Surgeons, served during World War I and in the South Pacific during World War II, formerly served on the state athletic commission and the Los Angeles Board of Civil Service Commissioners, chief of the medical department at 20th Century Fox Studios, member of staff, California and Queen of Angels hospitals, senior urologist, Presbyterian Hospital Olmstead Memorial, Los Angeles County Hospital, and Cedars of Lebanon Hospital, where he died June 24, aged 61, of lymphosarcoma

Stone, Murray Chaffee ⊕ Springfield, Mo , born in Leominster, Mass , in 1880, Harvard Medical School Boston, 1903, specialist certified by the American Board of Pathology, member of the College of American Pathologists and the American Society of Clinical Pathologists past president of the Greene County Medical Society, sheriff and formerly county coroner, in 1912 and 1913 state bacteriologist for the state board of health, served during World War I consultant for the Medical Center for Federal Prisoners attending pathologist for the Veterans Administration Hospital, pathologist for the Springfield Baptist Hospital, City Hospital, and St Johns Hospital, where he died June 12, aged 71, of gastrointestinal hemorrhage

Brown, Hubert Leslie ⊕ Hinsdale, N H , Baltimore Medical College, 1903, affiliated with Memorial Hospital in Brattleboro and Elliot Community Hospital in Keene, died June 24, aged 76, of coronary thrombosis

Burden, Verne Gerard ⊕ Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1919, certified by the National Board of Medical Examiners fellow of the American College of Surgeons, medical director of the Eastern State Penitentiary Hospital, chief of staff of Our Lady of Lourdes Hospital in Camden, N J , served on the staff of St Joseph's Hospital, formerly fellow in surgery at the Mayo Foundation in Rochester, Minn , died June 23, aged 56

Burnett, Charles Borromeo, South River, N J , Hahnemann Medical College and Hospital of Philadelphia, 1893, died May 12 aged 79, of chronic myocarditis

Gannon, Clarence Peter Lee, Kingston, N Y , University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1916, past president and for many years secretary of the Ulster County Medical Society, member of the Association of Military Surgeons of the United States, served during World War I, for many years health officer of the town of Ulster, affiliated with Kingston and Benedictine hospitals, died June 22, aged 67

Gousse, William Louis ⊕ Fairfield Me , Baltimore Medical College, 1911, past president of the Kennebec County Medical Association, served as school physician and health officer of the town of Fairfield, affiliated with Thayer Hospital and Sisters' Hospital in Waterville, where he died June 16, aged 73, of cerebral thrombosis, and diabetes mellitus

Greenstein, Harry ⊕ New York, University and Bellevue Hospital Medical College, New York, 1899, affiliated with New York Polyclinic Medical School and Hospital, died in Hunts Point Hospital May 25, aged 74

Griffin, Fred, Mexico, Mo , Washington University School of Medicine, St Louis, 1904, member of the American Medical Association, past president of the school board, affiliated with Audrain Hospital, died June 20, aged 70, of heart disease

Hayden, Louis Brooks ⊕ Livermore Falls, Maine, Tufts College Medical School, Boston, 1897, an Associate Fellow of the American Medical Association, served during World War I, formerly school physician in Plymouth, Mass , died June 12, aged 76, of pneumonia

Jones, Frederick Goodwin ⊕ Utica, N Y , Syracuse University College of Medicine, 1909, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology past president of the Utica Academy of Medicine, served overseas during World War I affiliated with St Luke's Home and Hospital, St Elizabeth, Faxton, Utica State, and Masonic Soldiers and Sailors Memorial hospitals, died June 5, aged 67, of coronary occlusion

Schneider, Harry ⊕ New York, Boston University School of Medicine, 1922, specialist certified by the American Board of Obstetrics and Gynecology, fellow of the American College of Surgeons on the staff of Beth Israel Hospital died April 20, aged 54 of cerebral thrombosis

Simmons, George W., Ripley, W Va , Maryland Medical College Baltimore, 1903, for many years director of the bank of Ripley, died June 11, aged 72, of carcinoma

Smullen, James Joseph Jr., Wisconsin Rapids, Wis , Loyola University School of Medicine, Chicago, 1934, member of the American Medical Association, affiliated with Riverview Hospital, died June 12, aged 42, as the result of a fall

Stone, Eustace B., Roanoke, Va Medical College of Virginia, Richmond, 1893, on the staff of Shenandoah Hospital, died April 17, aged 83, of coronary embolism

Wood, James William, Hanceville, Ala , Southern Medical College, Atlanta, 1897, died in Birmingham May 3, aged 78, of hypostatic pneumonia and arteriosclerosis

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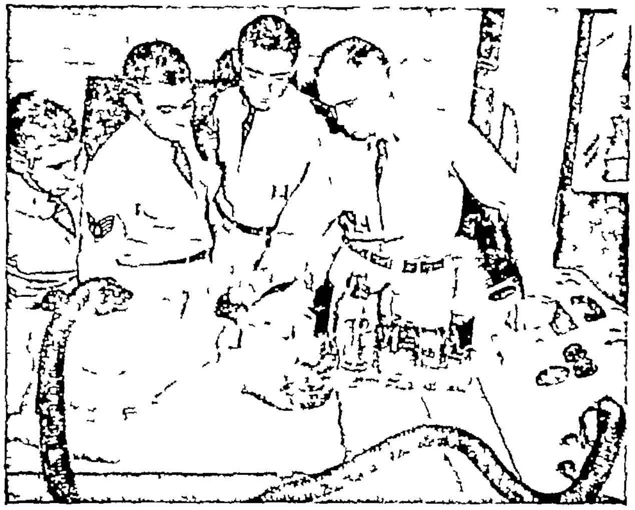
⊕ Indicates Fellow of the American Medical Association

GOVERNMENT SERVICES

AIR FORCE

Air Evacuation Units Trained to Use Respirators—A course in the operation, maintenance, and theory of all types of portable respirators, believed one of the first of its kind offered in the field, is now being given to selected personnel of the 1453rd Medical Air Evacuation Squadron at Hickam Air Force Base, Oahu, T H Highly qualified instructors of the unit, using working models of the respirators and conventional iron lung, are instructing 12 airmen, eight hours a day, five days a week, in this specialized field Each class lasts 30 days, and the training is so thorough that graduates know how to correct any mechanical failures that might occur The project is supervised by Comdr Karl R Whitney, deputy surgeon of PACD, Military Air Transport Service

Effective with victims of polio and spinal afflictions, the respirators can be used in either type C 54 or C-97 type aircraft of the 1500th Air Transport Wing now used in flying the Pacific airlift for MATS



Medical officer demonstrates operation of portable respirator for use in planes of air evacuation units

Aeromedical School Survey—Almost 80% of the work done at the Air Force School of Aviation Medicine is devoted to research on the medical problems of flight, according to a survey made by Col Frederick J Frese Jr, deputy commandant of the school A trifle more than 16% of the school s effort is required at present to train Air Force doctors in the special techniques of aviation medicine A scant 4% of its energies are expended on the clinical practice of medicine The survey findings cover only the activities of the aeromedical school headquarters at Randolph Field Because of the heavy demand for more medical personnel in the Air Force, training of flight nurses and enlisted technicians was transferred last year to a branch of the school at Gunter Air Force Base in Alabama The Gunter branch is reporting its manpower requirements separately The results of the survey will be used to determine the size of the staff needed to operate the School of Aviation Medicine during the next academic year

New Assignments—Five officers left the Randolph Field School of Aviation Medicine Aug 15 for permanent duty at other bases Lieut Col David S Evans, head of the department of neuropsychiatry since 1949 Capt George W Ell, assistant to the chief of the clinical medicine group since 1948, and Lieut Paul B Mullin assistant in psychology all received overseas assignments Col Ernest J Cone was assigned to the Surgeon General s office in Washington, while Maj Virgil R Zarling goes to axwell Air Force Base, Alabama

PUBLIC HEALTH SERVICE

Find Encephalitis Virus in Birds, Insects—A research team of the Public Health Service's Communicable Disease Center has isolated the virus of encephalitis from wild birds under natural conditions, in a series of field tests in Weld County, Colo The Laboratory work was performed at the Communicable Disease Center at Montgomery, Ala "It has been suspected for many years that birds harbor the virus, but this is the first time that their role definitely has been proven," said Dr T Aidan Cockburn, epidemiologist in charge of encephalitis studies in the Office of Midwestern CDC services

Isolation of the virus was reported twice from redwing blackbirds, and once from magpies, as well as from two batches of mosquitoes and one group of mites Dr Cockburn points out that wild birds, now proved to harbor the virus, do not become "sick" but act only as carriers, from which mosquitoes can acquire the virus PHS figures show that the incidence of encephalitis in the United States increased in 1950 for the second straight year In 1948 there were 575 reported cases, in 1949, 781 cases, and in 1950, 1,051 cases Dr Cockburn said the increase possibly was a result of better recognition of the disease However, he further said, "Many thousands more are believed to have gone unrecognized or to have been erroneously diagnosed as poliomyelitis '

The Colorado State Department of Public Health and the Weld County Health Department cooperated in the research program The public health team was comprised of a physician, an ornithologist, two entomologists, a nurse, a veterinarian, and virologist

Safe Milk Communities—Fifty four communities have been added to the list of safe milk communities, which is issued semiannually by the Public Health Service, and 21 communities on the previous list have been dropped The new listing includes 211 cities and counties and is for the period of July 1949 to June 1951, inclusive The ratings made by state milk sanitation authorities and reported to the Public Health Service are based on the Public Health Service Milk Ordinance which has been adopted by 369 counties and 1,492 municipalities in 39 states A community must receive a rating of at least 90% for a two-year period by the state authority to be eligible for the 'honor roll The ratings are concerned with health of dairy cattle, sanitary methods of handling milk, proper cooling, and adequate pasteurization

The semiannual list is published as a measure to encourage the maintenance of a high level of sanitation among communities which have adopted the Public Health Service Ordinance A separate list is compiled for communities in which both raw and pasteurized milk are sold No comparison is intended with communities operating under other milk ordinances The current list appears in the Aug 24, 1951, issue of *Public Health Reports*

Civilian Health Requirements Officer—Sanitary Engineer Director Wesley E Gilbertson, executive officer of the Public Health Service's Communicable Disease Center at Atlanta has been designated chief of the service s division of civilian health requirements Mr Gilbertson will be in charge of carrying out those claimant functions that have been assigned by the Defense Production Authority to the Federal Security Administrator and delegated by him to the Public Health Service These relate to the construction requirements of hospitals and health centers and to supplies in the health field including those needed by hospitals, health departments, private practitioner clinical laboratories, and industrial clinics Mr Gilbertson will be assisted by Mr Charles Lavin, also of the Communicable Disease Center, who has been coordinator of the program since its inception

Grants—The National Institute of Arthritis and Metabolic Diseases established by Congress last year as one of the National Institutes of Health, has awarded 24 grants, totalling $314 465 to nonfederal medical scientists for special study in this field

FOREIGN LETTERS

SPAIN

Congress of Spanish Cardiologists.—The third National Congress of the Spanish Society of Cardiology was held in Valencia Dec 5 8, 1950 Prof Dr F Rodriguez Fornos dean of the Faculty of Medicine of Valencia, was the president Official topics were (1) treatment of cardiac insufficiency, (2) congenital heart diseases, and (3) unipolar leads in electrocardiography Speakers on the first topic were Professors M Beltran Baguena (Valencia) and T Alday Redonnet (Madrid) Beltran Baguena reviewed the treatment of cardiac insufficiency Drs D A Gonzales Cruz, J Baguena Candela, D V Sorribes and D V Tormo, collaborators of Prof Beltran Baguena, discussed the treatment of cardiac insufficiency Dr Baguena Candela reviewed surgical treatment of congestive cardiac insufficiency Drs E Alcala Llorente and Martinez Ramon dealt with the more adequate treatment of geriatric cardiac insufficiency The studies of Prof Beltran Baguena and collaborators were based on clinical observations of 662 cases in 426 cases of left cardiac insufficiency 19 cases of right cardiac insufficiency 211 cases of total cardiac insufficiency, and six cases of nonspecific heart disease mainly cardiac neuroses

Prof T Alday Redonnet has published some 40 papers based on his pharmacologic studies of digitalis in Spanish medical journals He spoke about the clinical application of the drug on the basis of experimental results The Hatcher-Magnus method of digitalis assay may yield grossly erroneous results In 1927 he found that a Spanish digitalis containing 16 cat units per gram was practically inactive when administered to patients however, these patients improved rapidly after administration of 1 mg of digitoxin He later assayed Digitalis lanata and found it very active However, clinical results were poorer than results with the standard digitalis On the other hand when he assayed the Digitalis thapsi of Spain he found that it was only slightly more active than Digitalis purpurea However when administered to patients it was three or four times more active than Digitalis purpurea

In 1933 he submitted an extensive report on the subject to the Committee of Biologic Standardization of Drugs of the League of Nations In the report he called the attention of the committee to the unreliability of this method However, the report was not published by the committee In 1932 he suggested a method of bioassay of digitalis that should give results applicable to the clinical administration of the drug He maintained that methods in which frogs, rabbits guinea pigs and pigeons are used are of no value Only the methods in which cats and dogs are used are reliable, provided that the drug is given to the animals by the same route of administration as that used clinically The cumulative power of the drug must also be borne in mind

Prof Alday Redonnet described the activity of 58 glycosides and genins, as measured either by the Hatcher-Magnus method or by his own method Of the galenical preparations, digitalis injection is of very low activity Preparations of Adonis vernalis scilla, and several types of strophanthus are of low activity when administered by mouth However, when given intravenously they have effects similar to those obtained with digitoxin and with intravenous use of lanatoside C Digitalin and digitoxin are of value when administered orally, since they are almost completely absorbed by the intestine Digitoxin is more active when it is injected slowly than when it is injected rapidly Convallatoxin, ouabain and oleandrin do not increase in toxicity when they are injected slowly

The speaker discussed the various hypotheses concerning the mechanism of action of digitalis on circulation The toxicity of glycosides containing sulfhydryl groups does not diminish when those compounds are given either in association with or after intravenous injection of dimercaprol (BAL)

Dr A Lamelas head of the department of cardiology and endocrinology of the Casa de Salud Valdecilla (Santander), spoke on congenital heart disease He reviewed the embryology, classification of congenital heart disease, and the general methods of diagnosis with special reference to intracardiac catheterization, angiocardiography and electrocardiography He discussed the frequency and etiology of congenital heart diseases and reviewed 130 necropsies Common pathologic features of congenital heart disease are bacterial endarteritis or endocarditis imperfect physical development, tuberculosis, and congenital abnormalities Dr Lamelas discussed also, cyanosis and anoxemia and the possibility of sudden death

Dr A Duque Sampayo (Madrid) head of the department of cardiology of the Institute of Medical Pathology of which Dr Maranon is director spoke on unipolar leads in electrocardiography Classic bipolar leads give information only of the changes of position of the heart in relation to the anteroposterior axis whereas the unipolar leads from the extremities and Wilson s precordial leads give complete account of the changes of position of the heart in relation to its three axes Unipolar leads are confirmatory in the diagnosis of ventricular hypertrophy since they give clear electrocardiographic data showing especially the increased time of the intrinsic deflection Standard leads do not give diagnostic data in 50% of the cases of myocardial infarct Unipolar leads have clarified greatly the problems of bundle branch block They show the origin of extrasystoles and may eventually clarify the problem of complete arrhythmia

BRAZIL

Curative Action of Chloramphenicol and Dihydrostreptomycin in Frambesia Tropica—Dr F Nery Guimarães of the Oswaldo Cruz Institute reported the results of the treatment of yaws (frambesia tropica) with chloramphenicol and dihydrostreptomycin (five and four cases respectively) Chloramphenicol was administered orally for 10 days with a total of 10 gm in four cases and 20 gm in one case The daily total was divided into two doses The period of treatment with dihydrostreptomycin was also 10 days with a total of 10 gm divided into 20 intramuscular injections The results were reported together for the two groups as they were comparable Clinical cure was obtained between 10 and 20 days from the beginning of treatment Spirochetes were usually no longer present 48 hours after the beginning of treatment, however, in one case the organisms were present even after 72 hours A positive serologic reaction was reported in four cases (two in each group) immediately after the beginning of treatment but in all cases the results changed to completely negative The authors are entirely satisfied with the first results of treatment

Early Diagnosis of Pregnancy and Heterogenetic Reactions with Proteus OX19.—The frequency of a positive agglutination test with the strain Proteus OX19 in serums of normal and nonpregnant women led Dr Maria I Mello of the Oswaldo Cruz Instituto to investigate the influence of the blood groups on this reaction As the specific substance in the chemical composition of blood group A is closely related to that of gonadotropic hormones and of Proteus OX19 it might be possible to find some correlation between blood group and Proteus OX19 agglutination The results of the investigation disclosed that Proteus OX19 agglutinates only with blood group A serum, the highest agglutination titer being 1 80, while with the serum of pregnant women the titers are in almost all cases higher than this An attempt is being made to perform the test with the isolated polysaccharides instead of the 24-hour Proteus OX19 culture In cases of suspected pregnancy with a low agglutination titer, it is necessary that one know the blood group to assure the value of the agglutination test for diagnosis Normal serums belonging to the other blood groups gave negative results under Dr Mello s experimental conditions

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The items in these letters are contributed by regular correspondents in the various foreign countries

CORRESPONDENCE

ORTHOPEDICS AND INDUSTRY

To the Editor:—The article by Dr. Billig relating to Industrial Orothopedics, published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, July 28, 1951, should not be allowed to pass without comment and question. The article, if accepted as representative of modern American orthopedics, would indicate that most advances in our specialty in recent years have been wrongly conceived and ill advised.

Dr. Billig, by insinuation at least, classifies every physical complaint of the man in industry as due to some postural soft tissue abnormality which can be miraculously corrected by a few simple exercises performed three times daily. He does not even mention the many possible etiological factors which must be considered in the differential diagnosis of these problems. Any industrial concern which blindly follows such a program will force many of its employees to seek medical care outside of their own facilities for relief of those symptoms which arise from true organic lesions. In fact, the majority of complaints which could be satisfactorily managed with the regimens described by Dr. Billig would undoubtedly be functional in character.

I think it should be clearly stated that the opinions expressed by Dr. Billig may not represent the attitude of the average orthopedic surgeon toward the problem of medical care in industry.

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To the Editor:—In THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, July 28, 1951, page 1179, there appeared an article by Dr. Harvey E. Billig Jr. of Los Angeles, entitled "The Specialist Looks at Everyday Medical Care in Industry: Orthopedics." In this he states: "Chronic posture habit results in shortening of the fascial ligamentous fibrous structures to accommodate the posture maintained. When this is occupational, and when the occupational posture habit becomes the chronic posture habit, the gradually ensuing contractural stiffness results in not only a poor posture habit but symptoms as well. The management of a telephone company noticed a huge prevalence of backache, dysmenorrhea, and occipitocervical headaches radiating to the temporal region among the thousands of girls seated with forward thrust of head and neck at switchboards. Examination revealed a contracture of the ligaments in the cervical region and in the lower back region, radiating to the anterior pelvis, thence to the leg and iliotibial-band attachment at the lateral condyle of the tibia. In these girls the forward thrust of head and neck and the forward tilted pelvis had thus become a fixed posture habit. Placing an additional pull on the contracted ligaments in the neck by means of forced craniocervical rotation exacerbated the headache radiating up over the head into the peripheral distribution of the greater and lesser occipital nerves. After mobilization of this contracture by means of progressive accumulative loosening through forced cervical rotation stretching exercises done routinely three times to each side three periods daily, the headaches cleared up, not to return. Likewise, placing an additional pull on the ligaments running from the dorsolumbar portion of the back to the anterior pelvis, thence to the leg, exacerbated the symptoms of backache and menstrual cramps (pain radiating into the peripheral distribution of the ilioinguinal and iliohypogastric nerves arising from the twelfth dorsal and first lumbar nerves passing through the contracted fascial ramifications). After mobilization of the contracture by means of the progressive accumulative loosening through forced posterior tilt of back and pelvis on the leg done routinely three times to each side three periods daily, the backache and menstrual cramps cleared up, not to return. These stretching exercises are now a part of the employee health service program of American Telephone and Telegraph Company and are illustrated by diagrams in a booklet distributed to all its employees."

The background for a portion of the above references is probably as follows. In an article entitled "Menstrual Exercises" (*Indust. Med.* 12:588 [Sept.] 1943) Dr. Billig postulated that dysmenorrhea was frequently the result of "a postural defect of contracted fascial ligamentous bands restricting posterior tilt excursion range of the pelvis in relation to the legs and back. At menstruation (with the change in ovarian hormone level) the ligaments further shorten causing impingement with irritation of the peripheral spinal nerves passing through and by them. The nerves usually irritated are one or more of the following: the 11th dorsal, the 12th dorsal, the first lumbar and their branches, the ilioinguinal and iliohypogastric. The impingement gives rise to symptoms of pain in the low back in the region of irritation or in the region of distribution of these nerves in the lower abdominal wall or groin or both."

This article was co-authored by Dr. A. C. Dick, then medical director of the Consolidated Vultee Aircraft Corporation, and Mrs. H. N. Macy, chief nurse of the same corporation. It was reported that they had achieved a most remarkable decrease absenteeism, reduction in the use of menstrual cramps as an absentee excuse and increased efficiency as a result of the use of the Billig exercises for dysmenorrhea.

Parenthetically in "Queries and Minor Notes" in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (March 17, 1945, page 684), in commenting upon this theory it was stated: "It has not been proved that in all or most women with primary dysmenorrhea 'there is a postural defect of contracted fascial ligamentous bands restricting posterior tilt excursion range. . . .' Likewise there is no proof that at menstruation the ligaments further shorten, impinge and irritate the peripheral spinal nerves enumerated in the query. . . . In view of the favorable results described, if there was not a large psychic factor involved, some other reason for the benefits must be sought than that given by the proponents."

It should also be noted that the Billig exercises were being taught to the girls in the public schools of Los Angeles in 1944. These factors contributed to an interest by some of the women employees of the Pacific Telephone and Telegraph Company in Los Angeles. On Oct. 11, 1944, the first groups of women in the accounting department were trained in the exercise by a psychotherapist from the Harlan Shoemaker Foundation in Los Angeles, an organization which was sponsoring this activity. The accounting department first introduced the program, then the plant department used the plan, the latter part of October, 1944, and the traffic and commercial department commenced the program in November. Attendance was on a voluntary basis, and all women were given the opportunity to attend if they so desired. The group instructions took approximately three-quarters of an hour, and a case history on each of the girls was taken before proceeding. Subsequent reports made to Dr. Jerome Shilling, medical director of the telephone company in Los Angeles, by the managers of the respective departments in the spring of 1945, indicated that the program had been participated in by 424 plant women employees, 386 commercial women employees, 325 in the accounting department and one class of 62 traffic women employees. It should be noted that in the plant, commercial, and accounting departments the classes were given on company time and in the traffic department on employees' time. The initial enthusiasm apparently soon decreased, and the program has not been continued, largely owing to the disinclination of the women to persevere with the procedure. As expressed by Dr. Shilling, "Regular exercise three times a day becomes monotonous and the individuals are prone to drop by the wayside from this standpoint." In a letter dated Feb. 4, 1946, Dr. Shilling stated: "In conclusion and in specific answer to questions included in your letter, our results have not been conclusive or favorable. I do believe that in very occasional, selected specific cases that definite benefits do result. All in all, however, it has not been our experience that absenteeism was materially affected during the period of time that a number of employees were given instructions at the Billig Clinic. It might be said that we have not given this matter a fair and sustained trial However, as stated above, it is all but impossible to get an individual male or female, to continue with exercises in the prescribed manner and frequency over any sustained period of time Other than for dysmenorrhea, we have had little or no experience with the exercises given for other conditions I have, however had the opportunity to observe cases treated from other organizations and I am yet to be convinced this procedure is the answer to these perplexing chronic problems "

In June 1945, at a Bell System Medical Directors Conference the then existing reports on the Billig exercises and the contents of a brochure by Dr Billig Thirty Days Hath September " which deals with menstruation were discussed In the notes of that conference we stated It has been our opinion that from an objective scientific viewpoint the available evidence on an anatomical and physiological basis leaves considerable to be desired in the way of explanation compared with the reported results The question appears not to be whether or not the Billig exercises will stand in a cold light of scientific appraisal but rather whether or not there may be justification for including it as part of the information on this subject to be made available to our employees The consensus was that the exercise was not harmful and it was included with three other exercises as suggestions for possible relief in dysmenorrhea This booklet is not distributed to all employees as was stated in Dr Billig's July 28 1951 article but rather has been used in conjunction with health education group discussions and in the various company medical departments in specific individual situations

It is contended that the statement "The management of a telephone company noticed a huge prevalence of backache dysmenorrhea, and occipitocervical headaches radiating to the temporal region among the thousands of girls seated with forward thrust of head and neck at switchboards is without basis in fact It is also our opinion, based on the reports of many competent observations that the incidence of the conditions referred to is no greater if as great among telephone operators as compared with any of the clerical groups A great deal of research has been done in the development of switchboards and operators chairs with the objective of comfort and good posture The suggestion that backache, dysmenorrhea, and occipitocervical headaches are occupational in origin is also without basis in fact as related to the requirements of switchboard operating

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ALKALOSIS AND HYPERVENTILATION

To the Editor—In their article entitled, Alkalosis Due to Hyperventilation" (*J A M A* 146 1125 [July 21] 1951) Sattler Marquardt and Cummins stress the importance of pH determinations for determining the presence of respiratory alkalosis They state that a review of the literature reveals no clinical reports of hyperventilation alkalosis

In their report they cite three cases where they feel the test was of diagnostic value The first two appear to be well-confirmed cases of hyperventilation on a psychoneurotic basis however, I question the conclusion that the pH determination aided in the diagnosis In both cases the pH was within normal limits before a test period of voluntary hyperventilation In the first case the pH rose to 7 55 after 12 minutes of voluntary hyperventilation in the second it reached 7 49 after five minutes of hyperventilation These values are well within normal physiological limits In the third case that of a patient with cardiac disease who at the time was definitely irrational the pH was 7 62 Restoration of the pH to normal by the use of ammonium chloride was accompanied by disappearance of the mental confusion

It is well known that cardiac disease is one of the causes of lowered alveolar carbon dioxide tension In this case apparently it was sufficient to produce decompensation of the acid-base balance with production of true alkalosis The first two however may well have been cases of carbon dioxide deficit, but, since the pH was within normal limits (before the hyperventilation test period) they were definitely compensated A test of the blood for bicarbonate level would have determined whether a carbon dioxide deficit was actually present

As to the value of ventilation test periods in determining the presence of hyperventilation attention is called to an article by Carryer (*Proc Staff Meet* Mayo Clin 22 456 [Oct 1] 1947) in which the reciprocal relationship of carbon dioxide and pH of the serum during hyperventilation is portrayed in a chart A quick swing to a very high level of pH accompanies voluntary hyperventilation even under completely physiological conditions A further rather extensive discussion of the subject, with some results of experimental observation appears in an article by me (*Postgrad Med* 7 85 [Feb] 1950)

I agree that determination of the pH of the serum is valuable in these cases however, in order to determine precisely the patient s condition at any one time, a bicarbonate level of the blood should be part of the procedure

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ACTH, CORTISONE, AND TUBERCULOSIS

To the Editor—The Committee on Therapy of the American Trudeau Society asks the cooperation of the medical profession in a survey of the possible deleterious effects of cortisone and corticotropin (ACTH) on tuberculous infection in man Experimental work has indicated this possibility, and scattered clinical experience has suggested that both compounds may have a harmful effect in human tuberculosis

The American Trudeau Society through its Committee on Therapy, is anxious to obtain information confirming or disproving this impression and asks the cooperation of physicians throughout the country in collecting pertinent data as outlined below Since tuberculosis is a common chronic disease, it seems likely that many physicians have had an opportunity to observe the effects of corticotropin or cortisone on tuberculous infection coincident with the treatment of other disease states The Committee believes that this information is of sufficient importance to make such a study worth while suitable material would provide information of considerable significance which otherwise might not be available for years

It is understood of course that the Committee in no way wishes to interfere with the publication of results by individuals contributing to this study, and will respect any restrictions in the use of material

Information is desired concerning both pulmonary and extrapulmonary tuberculosis as to whether any clinician has observed any of the following effects (1) no apparent effect in patients with known active tuberculosis (2) an exacerbation of clinically active or apparently inactive tuberculosis during or after treatment with cortisone, or (3) a favorable effect in active tuberculosis

If such cases are available, the following data would be greatly appreciated (*a*) a brief clinical history, including a statement concerning the disease for which treatment was given and whether or not active or inactive tuberculosis was suspected before treatment was begun (*b*) pertinent laboratory data, including results of sputum examination for tubercle bacilli and (*c*) the temporary loan of representative x rays related to the tuberculosis if available, before during, and after treatment This information should be sent to Dr Robert H Ebert University of Chicago Clinics 950 E 59th St Chicago 37

William B Tucker, M D Chairman,
Committee on Therapy American Trudeau Society,
University of Minnesota, Minneapolis 14

LUDVIG HEKTOEN

To the Editor—In the long, honored, indeed magnificent career of Dr Ludvig Hektoen to which you give praise in The Journal of July 14 1951, we wish to note a service overlooked in your obituary to him Dr Hektoen in his wisdom and tolerance and foresight, became a member of the first Board of Trustees of the Institute for Psychoanalysis in 1932 and remained actively interested in the work of the Institute throughout his life For us to overlook mention of this service would be wholly out of keeping with the gratitude and affection we bore to this great scientist

Helen Ross, Administrative Director,
The Institute for Psychoanalysis, Chicago

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A M A Arch Dermat. and Syphilol , Chicago

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Contact Dermatitis Caused by Bamboo B L Schiff —p 66

Selenium Disulfide in Seborrheic Dermatitis —Sulfur compounds and preparations have been recommended for the therapy of a great variety of dermatoses, particularly for parasitic infestations and seborrheic dermatitis In the search for more efficient substances in the topical treatment of the seborrheic dermatoses, selenium was considered for therapeutic trial, because of its general properties and the group relationship of sulfur and selenium However, because selenium compounds had been known to have toxic effects, there was some hesitation about using them clinically Some selenium compounds penetrate the intact skin, and many of the more stable inorganic compounds might be studied for possible therapeutic use A moderately stable preparation of selenium disulfide was selected for this study, in the form of a shampoo, which contained 2 5% of selenium disulfide and 17% of sodium alkyl aryl sulfonate (nacconol®) a surface active agent, besides inert and stabilizing agents and water It was found by 48 hour and repeated patch tests for four weeks that the active constituent of the shampoo, selenium disulfide, produced neither primary irritation nor sensitization reactions in 10 normal subjects The shampoo was employed therapeutically over periods from one to seven months in 104 cases, 90 of which were cases of seborrheic dermatitis, without inducing signs of irritation, sensitization, or toxicity There was complete control of 81% of the cases of seborrheic dermatitis of all degrees of severity The shampoo did not influence the clinical course of seven cases of tinea capitis associated with the presence of Microsporum audouini In two patients with atopic dermatitis and three patients with exfoliative dermatitis the amount of scaling of the scalp was reduced In 19 patients who used the selenium shampoo once on their diseased scalp no absorption of selenium was evidenced by an increase in the excretion of selenium in the urine After the use of the shampoo on the badly fissured scalps of two patients for 14 and 19 successive days, respectively, there was no definite evidence of initial or progressive absorption of selenium

Dermatitis Due to Cinnamon —In the case reported in this paper, a chronic vesicular dermatitis of the hands of five years duration was found to be due to tooth paste flavored with cinnamon oil The hand eruption had occurred first and had apparently been induced by repeated contact with cinnamon powder Patch tests with cinnamon oil, 1% in alcohol, gave a 4+ reaction Cure of the entire eruption followed cessation of contact with cinnamon The lips and buccal mucous membrane had not been sensitized Apparently, when the skin is the original surface sensitized, the mucous membranes are seldom sensitized on a clinical level Contrariwise, when the mucous membrane is the original surface sensitized, the skin almost always shares in the sensitization Ingestion of cinnamon powder was followed by itching of the hands in 12 hours Ingestion of cinnamon oil was followed by itching and vesiculation of the hands after five days (delayed reaction) on one occasion and after 12 hours on a second occasion

A M A Arch Neurology and Psychiatry, Chicago

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Effect of Electroshock on Blood Pressure in Psychotic Patients W W Igersheimer and J A F Stevenson —p 740
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Hypoglycemic Convulsions in Postpartum Necrosis of Adenohypophysis —According to Clark and associates it was not until Sheehan s series of papers appeared that the true nature of hypopituitary cachexia (Simmonds' disease) was understood and that the relation of the clinical syndrome to ischemic necrosis of the adenohypophysis following severe postpartum collapse and hemorrhage was clarified That hypoglycemia and associated convulsive seizures can occur in this disease was first suggested by Wilder in 1930 Since convulsions may be the presenting symptom, this disorder is of much interest to the neurologist. In the woman whose case is reported the appearance of hypoglycemic convulsions was the dramatic episode that called attention to the diagnosis, although the patient had had premonitory symptoms for 17 years The immediate therapeutic problem was the control of the Addisonian crisis and associated hypoglycemia This end was achieved with aqueous and oil soluble adrenal cortex extract, cortisone, and parenteral injection of sodium chloride and glucose solutions Recovery has been maintained with daily injections of oil soluble adrenal cortex extract and thyroid extract by mouth, along with frequent feedings of a high protein and moderate carbohydrate and fat diet In spite of a grave situation characterized by a number of convulsions and a period of stupor lasting several weeks, the patient s intellectual functions apparently have not been impaired It should be recognized that women who have such symptoms as amenorrhea, myxedema, adrenocortical deficiency, hypoglycemia, and

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An asterisk (*) before a title indicates that the article is abstracted

convulsions may have postpartum necrosis of the adenohypophysis Emaciation is not necessarily present in this disorder The recognition of this syndrome and the appropriate therapy may greatly improve the outlook in a condition that heretofore had a poor prognosis in the severe cases

A M A Arch Otolaryngology, Chicago

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Rheumatic Fever in Adult Male—Because of the relatively few observations on the course of active rheumatic fever in young adult white males the authors report on 109 such cases encountered during 1948 and 1949 at an Army air base in Wyoming There was evidence of recent beta hemolytic streptococcic infection in almost every case Migratory polyarthritis and fever were the outstanding clinical manifestations of rheumatic fever in this group It was found that carditis could be demonstrated electrocardiographically in a high percentage of cases, provided daily tracings were taken Sinus bradycardia was found during the acute phase of the rheumatic attack with surprising frequency Though the total disease characteristically ran a benign course, organic heart murmurs appeared and persisted in 17 4% of the cases Mitral insufficiency and aortic insufficiency were the two predominant valvular lesions developing Moderate doses of acetylsalicylic acid (aspirin) were probably effective in alleviating symptoms but were ineffective in shortening the course of the illness or in preventing the development of valvular heart disease

Antigen Antibody Mechanism in Rheumatic Diseases.—Brown and co-workers regard the effectiveness of corticotrophin (ACTH) and cortisone in rheumatic diseases as evidence of the allergic nature of these diseases Since adrenal cortical hormones are known to block antigen antibody reactions without destroying the antigen this is presumed to be the mechanism of its action in rheumatic diseases and the explanation for the relapses that occur when it is discontinued The authors suggest that the antigen in the rheumatic diseases is provided by the pleuropneumonia group of organisms, which are intermediate in their properties between bacteria and viruses However, because the size of these organisms makes them invisible in tissues and their fastidious growth requirements make it difficult to culture and subculture them their etiological relationship has not yet been proved Indirect evidence that they may play a role is provided by the parallel between their in vitro response to antibiotics and the in vivo response of rheumatic diseases to the same antibiotics Often antibiotics to which the organisms are sensitive produce exacerbations in symptoms, presumably due to the liberation of increased amounts of antigen from the destroyed organisms In other less sensitive patients antibiotic therapy produces temporary improvement The authors also found that they were able to reduce the antibody-containing serum globulins in patients with rheumatoid arthritis by administering 2 5 to 10 gm of human serum albumin intravenously This effect was comparable to that obtained from cortisone therapy It was accompanied by a decrease in joint pain and swelling that lasted six to eight hours A combination of chloramphenicol and albumin produced even more remarkable improvement Human serum albumin also appeared to influence favorably two cases of serum sickness one severe penicillin reaction, and one case of acute conjunctivitis in Reiter s disease

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Osteonephropathy in Children.—The term osteonephropathy includes a variety of closely related but distinct syndromes in which there are bone changes associated with renal disease These are renal rickets nephrocalcinosis the Fanconi syndrome, and idiopathic hypercalcuria Two of these entities renal rickets and nephrocalcinosis are discussed in detail with presentation of eight cases of the former and one of the latter The bone changes in renal rickets resemble a combination of rickets and hyperparathyroidism with one or the other predominating The roentgen appearance of long bones is sufficiently characteristic to enable one to make the diagnosis of renal rickets in a great majority of the cases Cortical erosions are an important diagnostic clue but it is difficult to differentiate primary hyperparathyroidism from renal rickets on the basis of the bone changes alone Fortunately primary hyperparathyroidism in children is an extremely rare disease The roentgen appearance of the long bones in nephrocalcinosis differs in no way from ordinary

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Selenium Disulfide in Seborrheic Dermatitis —Sulfur compounds and preparations have been recommended for the therapy of a great variety of dermatoses particularly for parasitic infestations and seborrheic dermatitis In the search for more efficient substances in the topical treatment of the seborrheic dermatoses selenium was considered for therapeutic trial, because of its general properties and the group relationship of sulfur and selenium However, because selenium compounds had been known to have toxic effects, there was some hesitation about using them clinically Some selenium compounds penetrate the intact skin, and many of the more stable inorganic compounds might be studied for possible therapeutic use A moderately stable preparation of selenium disulfide was selected for this study, in the form of a shampoo, which contained 2 5% of selenium disulfide and 17% of sodium alkyl aryl sulfonate (nacconol®) a surface-active agent, besides inert and stabilizing agents and water It was found by 48 hour and repeated patch tests for four weeks that the active constituent of the shampoo, selenium disulfide, produced neither primary irritation nor sensitization reactions in 10 normal subjects The shampoo was employed therapeutically over periods from one to seven months in 104 cases, 90 of which were cases of seborrheic dermatitis, without inducing signs of irritation, sensitization, or toxicity There was complete control of 81% of the cases of seborrheic dermatitis of all degrees of severity The shampoo did not influence the clinical course of seven cases of tinea capitis associated with the presence of Microsporum audouini In two patients with atopic dermatitis and three patients with exfoliative dermatitis the amount of scaling of the scalp was reduced In 19 patients who used the selenium shampoo once on their diseased scalp no absorption of selenium was evidenced by an increase in the excretion of selenium in the urine After the use of the shampoo on the badly fissured scalps of two patients for 14 and 19 successive days, respectively, there was no definite evidence of initial or progressive absorption of selenium

Dermatitis Due to Cinnamon.—In the case reported in this paper, a chronic vesicular dermatitis of the hands of five years duration was found to be due to tooth paste flavored with cinnamon oil The hand eruption had occurred first and had apparently been induced by repeated contact with cinnamon powder Patch tests with cinnamon oil, 1% in alcohol, gave a 4+ reaction Cure of the entire eruption followed cessation of contact with cinnamon The lips and buccal mucous membrane had not been sensitized Apparently, when the skin is the original surface sensitized, the mucous membranes are seldom sensitized on a clinical level Contrariwise, when the mucous membrane is the original surface sensitized, the skin almost always shares in the sensitization Ingestion of cinnamon powder was followed by itching of the hands in 12 hours Ingestion of cinnamon oil was followed by itching and vesiculation of the hands after five days (delayed reaction) on one occasion and after 12 hours on a second occasion

A M A Arch Neurology and Psychiatry, Chicago

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Hypoglycemic Convulsions in Postpartum Necrosis of Adenohypophysis —According to Clark and associates it was not until Sheehan s series of papers appeared that the true nature of hypopituitary cachexia (Simmonds' disease) was understood and that the relation of the clinical syndrome to ischemic necrosis of the adenohypophysis following severe postpartum collapse and hemorrhage was clarified That hypoglycemia and associated convulsive seizures can occur in this disease was first suggested by Wilder in 1930 Since convulsions may be the presenting symptom, this disorder is of much interest to the neurologist In the woman whose case is reported the appearance of hypoglycemic convulsions was the dramatic episode that called attention to the diagnosis, although the patient had had premonitory symptoms for 17 years The immediate therapeutic problem was the control of the Addisonian crisis and associated hypoglycemia This end was achieved with aqueous and oil soluble adrenal cortex extract cortisone, and parenteral injection of sodium chloride and glucose solutions Recovery has been maintained with daily injections of oil soluble adrenal cortex extract and thyroid extract by mouth, along with frequent feedings of a high protein and moderate carbohydrate and fat diet In spite of a grave situation characterized by a number of convulsions and a period of stupor lasting several weeks, the patient s intellectual functions apparently have not been impaired It should be recognized that women who have such symptoms as amenorrhea, myxedema, adrenocortical deficiency, hypoglycemia, and

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convulsions may have postpartum necrosis of the adenohypophysis Emaciation is not necessarily present in this disorder The recognition of this syndrome and the appropriate therapy may greatly improve the outlook in a condition that heretofore had a poor prognosis in the severe cases

A M A Arch Otolaryngology, Chicago

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Recent Trends in Breast Feeding Review N R. Newton and M N Newton.—p 691
Idiopathic Scoliosis. A. M Bestebreurtje —p 699

Rheumatic Fever in Adult Male.—Because of the relatively few observations on the course of active rheumatic fever in young adult white males, the authors report on 109 such cases encountered during 1948 and 1949 at an Army air base in Wyoming There was evidence of recent beta hemolytic streptococcic infection in almost every case Migratory polyarthritis and fever were the outstanding clinical manifestations of rheumatic fever in this group It was found that carditis could be demonstrated electrocardiographically in a high percentage of cases, provided daily tracings were taken Sinus bradycardia was found during the acute phase of the rheumatic attack with surprising frequency Though the total disease characteristically ran a benign course, organic heart murmurs appeared and persisted in 17 4% of the cases Mitral insufficiency and aortic insufficiency were the two predominant valvular lesions developing Moderate doses of acetylsalicylic acid (aspirin) were probably effective in alleviating symptoms but were ineffective in shortening the course of the illness or in preventing the development of valvular heart disease

Antigen Antibody Mechanism in Rheumatic Diseases.—Brown and co workers regard the effectiveness of corticotrophin (ACTH) and cortisone in rheumatic diseases as evidence of the allergic nature of these diseases Since adrenal cortical hormones are known to block antigen-antibody reactions without destroying the antigen, this is presumed to be the mechanism of its action in rheumatic diseases and the explanation for the relapses that occur when it is discontinued The authors suggest that the antigen in the rheumatic diseases is provided by the pleuropneumonia group of organisms, which are intermediate in their properties between bacteria and viruses However, because the size of these organisms makes them invisible in tissues and their fastidious growth requirements make it difficult to culture and subculture them, their etiological relationship has not yet been proved Indirect evidence that they may play a role is provided by the parallel between their in vitro response to antibiotics and the in vivo response of rheumatic diseases to the same antibiotics Often antibiotics to which the organisms are sensitive produce exacerbations in symptoms, presumably due to the liberation of increased amounts of antigen from the destroyed organisms In other less sensitive patients antibiotic therapy produces temporary improvement The authors also found that they were able to reduce the antibody-containing serum globulins in patients with rheumatoid arthritis by administering 2 5 to 10 gm of human serum albumin intravenously This effect was comparable to that obtained from cortisone therapy It was accompanied by a decrease in joint pain and swelling that lasted six to eight hours A combination of chloramphenicol and albumin produced even more remarkable improvement Human serum albumin also appeared to influence favorably two cases of serum sickness, one severe penicillin reaction, and one case of acute conjunctivitis in Reiter's disease

American Journal of Orthopsychiatry, New York

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Osteonephropathy in Children.—The term osteonephropathy includes a variety of closely related but distinct syndromes in which there are bone changes associated with renal disease These are renal rickets, nephrocalcinosis, the Fanconi syndrome, and idiopathic hypercalcuria Two of these entities, renal rickets and nephrocalcinosis, are discussed in detail with presentation of eight cases of the former and one of the latter The bone changes in renal rickets resemble a combination of rickets and hyperparathyroidism, with one or the other predominating The roentgen appearance of long bones is sufficiently characteristic to enable one to make the diagnosis of renal rickets in a great majority of the cases Cortical erosions are an important diagnostic clue, but it is difficult to differentiate primary hyperparathyroidism from renal rickets on the basis of the bone changes alone Fortunately, primary hyperparathyroidism in children is an extremely rare disease The roentgen appearance of the long bones in nephrocalcinosis differs in no way from ordinary rickets Renal calcifications, if present, may be suggestive, but the final clinical diagnosis cannot be made without a complete history, physical examination, and laboratory study If sufficient renal impairment is present in primary hyperparathyroidism, the bone lesions could be indistinguishable from renal rickets The diagnosis could then only be made after exhaustive clinical and laboratory studies In primary hyperparathyroidism, there is almost always elevation of the serum calcium level as opposed to the normal or slightly depressed serum calcium level found in renal rickets

Annals of Western Medicine & Surgery, Los Angeles

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Phonocardiography and Cardiac Surgery —The graphic recording of the heart sounds (phonocardiography) is a much more objective and reliable method of studying functional changes in the heart than is auscultation Moreover, simultaneous phono cardiograms and part-electrocardiograms yield a more accurate estimate of ventricular systole than any other method For these reasons phonocardiography was used to study the functional changes in the cardiovascular system in three patients following operations for coarctation of the aorta, rheumatic mitral stenosis, and tetralogy of Fallot, respectively The systolic murmur in the first case and the diastolic murmur in the second disappeared while the systolic apical murmur in the third case was highly attenuated In the patient with coarctation of the aorta, the hemodynamic systole, which was normal before operation, was temporarily shortened after operation but soon returned to normal In the patient with mitral stenosis the preoperatively shortened systole was distinctly prolonged postoperatively, although not the normal value In the patient with tetralogy of Fallot systole was constantly normal The authors recommend this combination of phonocardiography and electrocardiography in the evaluation of the effects of cardiac operations

Bulletin of Johns Hopkins Hospital, Baltimore

88 499-580 (June) 1951

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Cincinnati Journal of Medicine

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Sex Linked Juvenile Diabetes Mellitus.—This report presents a genetic and clinical study of a family of eight persons (three boys, three girls, and their parents) The father and the three girls are of average height and have brown hair and eyes, the mother and the three boys have blond hair and blue eyes The growth curves of the boys and their mother fall within the lowest 1% of the normal range The boys have diabetes mellitus The other members of the family show no dextrose intolerance The family history was traced back for three generations, and it is believed that the diabetes mellitus is probably inherited as a sex-linked recessive characteristic with heterozygous parents Considered mathematically, growth retardation and blondness in the same siblings are thought to be inherited as recessive autosomal characteristics from a homozygous mother and a heterozygous father

Journal of Immunology, Baltimore

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Effect of Decreasing Amount of Lung Tissue on Right Ventricular Pressures in Animals R. F Carlson B C Charbon H. G A Charbon and W E. Adams —p 621

Bullet Embolus to Femoral Artery Following Thoracic Gunshot Wound.—The man whose case is presented was shot in the right arm and right flank Half an hour later he noticed pain in his left groin and soon thereafter pain throughout his entire left leg with inability to walk One bullet entered just anterior to the right greater trochanter, the other went through the soft tissues posterior to the right humerus and entered the chest through the fifth interspace The left leg was cold and paralyzed below the knee Roentgenograms showed no foreign body in the chest where one was expected but the shadows of two bullets were present in the film of the pelvic region The bullet that had entered the right hip lay along the inferior ramus of the right pubic bone The other bullet lay in the position occupied by the left femoral artery immediately over the head of the left femur at the point where the profunda artery arises It was thought at first that the bullet that entered the region of the right hip had damaged the lumbosacral plexus causing paralysis A neurosurgical consultant felt that a vascular occlusion was the cause The bullet was found in the artery just at the point where the profunda branch arises It was extracted This appears to be the sixth case of its kind with survival of the patient In addition 15 other cases in which bullet wounds of the heart or associated great vessels had been followed by peripheral arterial embolization of the foreign body are summarized Study of these cases suggests that a thoracic wound with a small caliber missile may do no serious damage to the lungs and pulmonary vessels but still may have sufficient force to pierce one wall of the aorta or of a cardiac chamber It may then be embolized immediately or later to the systemic vessels being carried usually to the iliac or femoral vessels and more commonly to the left side In bullet wounds with only a wound of entrance, failure to demonstrate the foreign body in the expected region should cause suspicion that it may have entered the cardiovascular system and been carried away Other parts of the body should be studied roentgenographically The correct diagnosis should be followed by early embolectomy

New England Journal of Medicine, Boston

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*Carcinoma of Colon and Rectum Observations on Massachusetts General Hospital Cases 1937 1948 C. E Welch and W P Gidings —p 859

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Unexpected Ultra Violet Ray Burn Received in Unusual Manner J G Downing J W Baird and J W Wyman —p 876

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Carcinoma of Colon and Rectum —Reported results of treatment in cancer of the colon and rectum are characterized by extreme disparity The surgeon who discards cases not operated on, those in which only palliative resection was done, deaths from operations, later deaths from extraneous causes and patients who have not been followed obviously will have a comparatively high percentage of cancer cures but such a system is manifestly unfair to anyone who wishes to consider the entire problem of cancer of the colon and rectum The two best methods of calculating survival rates are (1) inclusion of all cases appearing in a given clinic or geographical area and (2) calculation of survival rates on the number of patients on whom resections for cure are performed This paper analyzes 1 876 cases of carcinoma of colon and rectum that were observed at the Massachusetts General Hospital from 1937 to 1948 Of this number, 1,088 were seen between 1937 and 1943, and the five-year survival rate was determined for this group Over all figures indicate that 77% of the patients who entered the hospital with cancer of the colon and rectum from 1937 to 1948 had resection of the involved bowel The resectability increased from 72% in 1937-1943 to 81% in 1944 1948 Five year survivals were obtained in only 25% of those observed from 1937 to 1943 If the results are calculated on the basis of operative survivals with resections for cure 45% survived the five year period The latter figure varies depending on whether lymph nodes are involved (55% when they are not involved, 26% when metastases are present) Prophylactic colectomy should be performed in ulcerative colitis and multiple polyposis Polyps of the rectum or low sigmoid may be treated by fulguration through the sigmoidoscope when the pedicle is long and benign If after a polyp has been removed through the sigmoidoscope the pathologist returns a diagnosis of cancer, a radical operation should usually be performed Resection of a segment of the colon and mesentery should be done when the polyp is in the sigmoid or higher Complete left colectomy is required if metastatic nodes are found during a resection for cancer of the sigmoid or left colon Resection of tumors of the lower sigmoid and intraperitoneal rectum with anastomosis should not be done unless at least 5 cm of normal bowel and pericolic tissue can be obtained below the tumor Unfortunately nearly two thirds of all patients with cancer of the colon and rectum are incurable when they reach the hospital Further improvement in therapeutic results will depend on routine proctosigmoidoscopy as an integral portion of the physical examination

Coxsackie Virus Infection —Coxsackie virus was first identified during a study of five small outbreaks of poliomyelitis in New York during the summer of 1947 The first strains were isolated from two paralyzed boys in the village of Coxsackie The other epidemics in New York that year did not yield Coxsackie virus but a number of isolations including a second serologic type, were made later from specimens collected during the summer of 1947 in Wilmington, Del During 1948 and 1949 the search was widened in New York, and 24 isolations were made including additional types and a second variety, Coxsackie virus group B This report summarizes the clinical and epidemiological observations made during these three years The data are derived largely from the records of 517 patients whose feces were tested for pathogenicity for suckling mice Of the 517 cases tested, 30 (5 8%) yielded Coxsackie virus The virus was commonest in younger children and during the late summer months The clinical records of poliomyelitis" patients from whom Coxsackie viruses were isolated did not differ significantly from the records of patients from whom virus was not isolated The percentage of specimens that contained virus was greatest in 1947 and least in 1949 There was an inverse relation between the frequency of isolation of Coxsackie virus and the frequency of paralysis by year If such a difference occurred consistently it would afford one means of distinguishing between poliomyelitis epidemics that are and those that are not complicated by the presence of Coxsackie-virus infection

Ohio State Medical Journal, Columbus

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*Effect of Histamine on Marchiafava Micheli Syndrome (Paroxysmal Nocturnal Hemoglobinuria) E J Stefanic H F Loyke and M A. Kraft —p 424
Weber-Christian Disease Report of Two Cases One with Autopsy F R. Hanrahan Jr V D Ippolito and R W Dilworth —p 427
Unusual Intra Abdominal Hernias With Case Reports R. E Pickett —p 430
*Heterotopic Pregnancy—(Combined Intra Uterine and Extra Uterine Pregnancy) C J Derby and R C Miller —p 433
Schizophrenia Treated with Insulin Shock Followed by Electroshock Therapy D M Palmer and E S Garrett Jr —p 435
Modern Concept of Glaucoma H H Insel —p 438

Histamine in Marchiafava Micheli Syndrome —The history is presented of a man, 42, with slight jaundice, weakness, an enlarged spleen and liver, and paroxysmal hemoglobinuria This and the positive Ham-Horack test classified the case as one of Marchiafava-Micheli syndrome, also known as paroxysmal nocturnal hemoglobinuria The literature on the therapy of this condition indicates that neither blood transfusion nor splenectomy, nor various other treatments produce satisfactory results It appears that the red blood cells in these patients have for some reason become sensitized to a potential lysin present in the patient s own serum and in normal serum Working on this hypothesis one of the authors of this paper attempted to desensitize the patient with histamine diphosphate This was first given intravenously in a dose of 2 75 mg in 250 cc of isotonic solution of sodium chloride After eight consecutive days of therapy the Ham Horack test showed no hemolysis between the patient s cells and serum and only partial hemolysis between the patient s cells and normal serum After another 12-day course of histamine the Ham Horack test again showed the same results Eighteen days later, the test had become completely negative for hemolysis of the patient s red blood cells between both the patient s serum and normal serum When it was found that the anemia persisted (erythrocyte count between 2 and 2 9 million and hemoglobin of 45 to 49%), the bone marrow was examined and erythroblastic hyperactivity was discovered Skin tests, which were made because of a history of urticaria, remained negative Liver biopsy disclosed normal tissues but hemosiderosis It was decided to resume histamine desensitization, but this time via the subcutaneous and later the intramuscular route Later, because there was no improvement in the anemia and because there was again hemolysis between the patient's cells and normal serum, the intravenous administration of histamine was resumed After this the Ham-Horack test showed negative hemolysis between the patient s cells and both normal and his own serum The intravenous administration of histamine has been continued to date, but the anemic picture remains unchanged It is suggested that there may be an altered phospholipid cholesterol ratio in the stroma of the red blood cells

Heterotopic Pregnancy —The woman whose case is presented had had her last menstrual period on Oct 10, 1949 She had two living children but no miscarriages She complained of lower abdominal pain and vaginal bleeding Pelvic examination revealed a soft uterus enlarged to the size of a two and one-half to three month pregnancy and marked tenderness in the left adnexal region Sedatives and bed rest were ordered, and the vaginal bleeding subsided One week later, on Jan 3, 1951 she had severe cramps in the left lower quadrant and vaginal spotting and was in mild shock She was hospitalized with a provisional diagnosis of ruptured left tubal pregnancy Exploratory laparotomy revealed a large quantity of blood in the peritoneal cavity The left tube was distended with a ruptured tubal pregnancy The fundus was soft and symmetrically enlarged to about the size of a two and one half to three month pregnancy The pregnant tube left ovary and the appendix were removed, and the abdomen was closed After the operation the woman was seen at monthly intervals A full term living female infant was delivered in July Ectopic pregnancy is said to occur about once in every 300 normal pregnancies, and the incidence of combined pregnancy is about one in 30,000 pregnancies The preoperative diagnosis of heterotopic pregnancy is a difficult one, because of concomitant enlargement of the uterus Cul de sac tenderness with a soft enlarged uterus should bring to mind the possibility of such a diagnosis A second sign of double pregnancy is the presence of two corpora lutea in the ovaries, indicating the possibility of two conceptions

Southern Medical Journal, Birmingham, Ala

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*Most Detectable Internal Cancer R H Overholt —p 493
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Detection of Lung Cancer —Early detection and cure rates should be higher for lung cancer than for cancer of any other internal organ for two reasons 1 The lungs can be screened more readily on a mass production basis than any other organ, because the subject does not have to be seen by the physician 2 Small cancers a few millimeters in diameter produce detectable shadows in survey roentgenograms In various surveys the incidence of primary neoplasms of the lung among patients with asymptomatic lesions discovered by roentgenography has varied from 35 to 74% Exploratory thoracotomy is necessary to establish the diagnosis in many cases, negative bronchoscopic or cytological examinations should not be used as evidence of the absence of cancer In Overholt s experience with 863 cases of primary cancer of the lung, 75% of the asymptomatic patients had localized lesions with no evidence of spread, whereas this was true of only 11% of the symptomatic cases The lesions were resectable in 100% of the asymptomatic group and in 30% of the symptomatic group The five year cure rate for the symptomatic group was 11% If current trends continue, the cure rate for the asymptomatic patients will be 75%

Incidence of Lung Cancer —These authors believe that the alleged increase in the incidence of cancer of the lung is more apparent than real In a review of 6,663 autopsies performed between 1920 and 1949 they found 1 017 cases of cancer, of which 67 were cancers of the lung From their material and from the literature they concluded that the frequency of cancer of the lung relative to all malignant tumors is similar to that observed 25 to 50 years ago They believe that lung cancer, which is commonest in the sixth decade of life, appears to be increasing only because a larger proportion of the population now reach this age They also believe that data on the incidence of lung cancer obtained from death certificates are not reliable, since many supposed tumors of the lung are metastatic rather than primary Finally, they observe that since 92 5% of lung cancers occur in males and 83 5% in the white race, as contrasted with the Negro race, both sex and race may play some role in the pathogenesis of this tumor

FOREIGN

Acta Obstet et Gynec Scandinavica, Stockholm

30 359-454 (No 4) 1951

Diagnosis and Treatment of Genital Tuberculosis in Women S O Liljedahl and Å B V Rydén —p 359
*Spinal Anaesthesia as Treatment of Postpartum Atony of Uterus F Fuchs —p 384
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Maintenance of Early Pregnancy Despite Extirpation of Three Corpora Lutea K. Kulseng Hanssen —p 420
Potassium Deficiency in Hyperemesis Gravidarum N Bergqvist —p 428
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Spinal Anesthesia for Post Partum Atony of Uterus.—In 1942 Hansen reported four cases of post partum atony of the uterus in which spinal anesthesia proved effective Since that time this treatment has been used in eight other women (in one of them in two births) Each time the desired effect was obtained The hemorrhage varied from 800 to 1,900 ml One patient was in deep shock before the spinal anesthesia was given, yet the effect was prompt and life saving It is important that the blood lost be replaced by blood transfusion The method should be used before the blood loss exceeds 750 ml , if the blood pressure shows signs of falling, when it is certain that the placenta is intact, and when pituitary extract and ergot preparation and compression of the aorta have had no effect Should the method fail hysterectomy can be performed as a last resort without further anesthesia A 3 5% solution of procaine hydrochloride was used in all cases, from 10 to 12 ml were injected in the course of four or five minutes The blood pressure fell in most cases, but this could be counteracted by means of ephedrine The blood transfusions contributed to the recovery

Australian and New Zealand J Surgery, Sydney

20 245 318 (May) 1951

Technique of Gastrectomy L. Doyle —p 245
Squamous Epithelium in Encysted Hydrocele of Cord Note on Squamous Epithelium of Peritoneal Origin E S J King —p 265
Observations on Surgical Anatomy of Thoraco-Lumbar Sympathetic System K. C Bradley —p 272.
*Sequelae of Treatment of Hydatid Cysts of Lung S C Fitzpatrick —p 278
Technical Aspects of Surgery of Hypertension with Follow Up of Fifty Cases D Miller —p 285
Diaphragmatic Deformation of Liver G S Christie —p 289

Hydatid Cysts of Lung.—When an unruptured hydatid cyst of the lung is completely removed surgically the patient usually has a smooth convalescence and serious sequelae are uncommon When patients are first seen with the cyst already ruptured, complications will be more frequent and the mortality rate will approximate 5% The main sequelae are (1) anaphylactic shock (2) lung hydatid abscess persistent cavity and chronic empyema, (3) recurrence of daughter cysts and (4) fibrosis and bronchiectasis This report is based on observations on 80 cases of hydatid cysts of the lung, of which 70 have been followed up Fifty of these patients, who have been under observation for one to 28 years, show no sign of persisting pulmonary lesion attributable to hydatid cysts of the lung The postoperative course was unsatisfactory in the remaining 20 cases There were four deaths following operation After briefly reporting the histories of these four patients the author discusses the prevention and treatment of the four groups of sequelae

British Journal of Dermatology, London

63 203 240 (June) 1951

*Kaposi s Varicelliform Eruption Record of Outbreak J Sommerville W Napier and A Dick.—p 203
Acne Vulgaris Psychosomatic Study E Wittkower —p 214
Note on Treatment of Lupus Erythematosus with Vitamin E J Morgan —p 224
Acanthosis Nigricans T Cochrane and J O D Alexander —p 225
Solar Urticaria (Wave Length Less Than 3700 Å) I Anderson —p 230

Kaposi's Varicelliform Eruption —This paper describes a group of cases of Kaposi s varicelliform eruption that appeared at the time of widespread vaccination occasioned by the presence of smallpox in Glasgow Of the 10 patients observed four were unrelated two were members of the same household, and four were infected while in hospital for treatment of a preexisting skin condition All had suffered previous skin damage and all had had contact with recently vaccinated persons but were unvaccinated themselves, except for one, who had been vaccinated about a week before his illness All showed the clinical picture of a grouped pustular eruption situated on an erysipeloid base Vaccinia virus was recovered in four cases Two of the 10 patients were only mildly ill and required only local treatment Four others were moderately febrile for two or three days appearing to respond favorably to penicillin and a combination of sulfonamides The remaining four patients had general toxemia which ended fatally in one case and endangered life in the other three Penicillin with or without sulfonamides, had no effect, whereas the administration of aureomycin in two of them appeared to coincide with a significant fall of temperature and striking improvement Kaposi s title notwithstanding there is little likelihood of confusion with chickenpox The resemblance to small pox on the other hand, particularly in an adult whose face is affected, may be very striking Since Kaposi s eruption is highly infectious in susceptible persons unvaccinated sufferers from eczema should be warned of the danger of exposing themselves to contact with vaccinia A newly vaccinated person should not be admitted to a hospital ward particularly a dermatologic ward, without proper precautions to safeguard the other patients During times of widespread vaccination it would probably be wise to discharge from dermatologic wards patients, particularly children with allergic eczematous conditions

British Journal of Radiology, London

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British Medical Journal, London

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Pregnancy Prolonged Beyond Expected Date D Latto —p 1364

Changes in Sweating After Prickly Heat —A man newly arrived in the tropics was given (in October) an acclimatization test consisting of five 20 minute cycles of work and rest in a climate of 100 F (37 8 C) dry bulb 93 5 F (34 2 C) wet bulb air movement 50 ft (17 m) a minute Pulse rates rectal temperatures and body weights were recorded every 10 minutes serial samples of sweat were obtained by an arm bag and analyzed for chloride and water drunk and urine passed were measured Within a few weeks, and a short while after a severe sunburn prickly heat developed The irritation kept him awake at night and he began to complain of lassitude and debility The condition was exacerbated by exposure to climates in which although he sweated freely evaporation was rapid enough to leave the skin sticky rather than wet, profuse sweating, with perspiration running off the skin, tended to give relief In March, after he had been going into the climatic chamber three or more times a week for 20 weeks, he was again tested to determine to what extent he had become acclimatized Changes the reverse of acclimatization were found He had a mild form of type 2 heat exhaustion, which, in accordance with Selye s terminology, might be called a ' disease of adaptation " The adrenal cortex seems to be involved in the control of sweating Prickly heat would be the stress which, added to the several already imposed by a tropical climate, would rapidly lead to what Selye calls the exhaustion stage," so that even after apparent recovery the heat tolerance remains diminished

Canadian Medical Association Journal, Montreal

64 477-570 (June) 1951

Canadian Red Cross School Meal Study F F Tisdall E C Robertson T G H Drake and others —p 477
*Influence of STH ACTH and Cortisone upon Resistance to Infection H Selye —p 489
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Accidental Ligation of Hepatic Artery and Its Treatment P W Edgecombe and C Gardner —p 518
Future of Pathologist in Practice of Medicine His Status and Prestige J H Fisher —p 522
Special Indications for Rectal Pentothal in Children D W Whyte —p 525

Lowered Resistance to Infection Resulting from Cortisone and Corticotrophin —It became evident in animal experiments that toxic doses of cortisone and corticotrophin (ACTH) usually cause death as a result of unbridled bacterial proliferation This usually starts in the lung and leads to pulmonary abscess formation, but eventually it may evoke the picture of general septicemia with abscesses in the liver, spleen, kidneys, and sometimes other organs The increasing clinical use of these hormones revealed that they also predispose patients to infection In particular, they may reactivate dormant foci of pulmonary tuberculosis Similarly, in certain types of pneumonia, corticotrophin and cortisone may promote the invasion of the causative microorganisms into the general circulation The mechanism through which corticotrophin and cortisone diminish resistance to infection is not yet clearly understood, but theoretic considerations led Selye to suspect that the inhibitory effect of these hormones on granuloma formation (and the consequent encapsulation of infectious foci), their destructive effect on lymphatic tissues, as well as their general catabolic effects, might be involved Since in all these respects the somatotrophic hormone (STH) acts as an antagonist of corticotrophin, he felt that it would be of interest to establish, by animal experiments, whether somatotrophic hormone could raise resistance to infections Experiments performed on rats to ascertain this revealed that both cortisone and corticotrophin, when given in toxic doses, can cause fatal systemic infections that are presumably due to otherwise non pathogenic micro organisms, such as are normally present in the body This effect of cortisone and corticotrophin can be completely prevented by suitable doses of purified somatotrophic hormone

Treatment of Alcohol Withdrawal Symptoms —One of the most successful treatments for the intoxicated alcohol addict consists in the intravenous injection of dextrose, insulin and a solution of vitamin B complex However, the contraindications of severe heart disease, hematemesis, and inaccessible superficial veins must be kept in mind The injection is prepared by adding to a 50 cc vial of 50% dextrose an amount of standard insulin estimated on the basis of age and weight (from 10 to 50 units) and a solution of vitamin B complex containing a minimum of 20 mg of thiamine and 200 mg of nicotinamide This mixture is drawn into a 50 cc syringe and injected slowly into one of the cubital veins An optimum reaction is one in which the patient begins to perspire and goes to sleep approximately one hour after the injection This reaction is allowed to proceed for a minimum of 30 to 45 minutes before it is terminated with 50 cc of 50% dextrose given intravenously, preferably into a different vein than the one used for the original injection Usually, the reaction is terminated with a sweet drink If no reaction occurs after 90 minutes, it is permissible to inject an additional 10 or 20 units of insulin intramuscularly From the time of injection, until the insulin reaction is completed, it is imperative that a nurse be in constant attendance on the patient and that a physician be immediately available When a good initial reaction has been obtained, a patient may benefit from a second reaction of this type at any time after a six hour interval In the chronic phase of alcohol addiction the injection has been repeated three times within the first 36 to 48 hours in order to more rapidly restore normal sleeping and eating habits A satisfactory insulin reaction after the first injection with diminution in craving and improvement in behavior was observed in 272 of 325 patients (84%) This method can be employed in the general hospital Delirium tremens can be avoided or, if present, may be rapidly interrupted There is no necessity for the 'tapering off' technique with this treatment The use of sedatives, hypnotics, or narcotics is contraindicated in the treatment of alcohol addiction

Endokrinologie, Leipzig

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*Addison s Disease and Pernicious Anemia F Boenheim —p 140
Role of Hypophysis in Formation of Constitutional Types J A Schneider —p 161

Menstruation Induced by Desoxycorticosterone Acetate During Menopause —Desoxycorticosterone or its acetate influences the sex organs It has accelerated sexual maturation in mice and promoted the growth of the uterus in young rabbits In castrated rats who have undergone adrenalectomy, it has been known to exert a folliculinizing and luteinizing effect At the medical clinic of the University of Würzburg it was possible to observe the influence exerted by desoxycorticosterone acetate on the genital system, when it was administered for various disorders, particularly for gastric and duodenal ulcer in women between 20 and 65 With a daily dose of 20 mg , menstruation was often brought on from two to five days before the usual period Furthermore, menstruation recurred in six women between 54 and 64 who had not menstruated for years A table presents data on age, duration of menopause, dosage of desoxycorticosterone acetate, and duration, amount, and painfulness of menstruation produced by desoxycorticosterone acetate The relation of desoxycorticosterone to the endometrium presupposes a complex action mechanism, and the authors suggest possible interrelated functions

Addison's Disease and Pernicious Anemia —In the classic description by Addison of the disease named after him, anemia is given as the cause Later the combination of severe anemia, particularly of pernicious anemia and Addison s disease (suprarenal insufficiency), has been repeatedly denied or ignored However the combination has been mentioned by Biermer, by Bittorf in one of a series of cases of chronic Addison s disease and more recently (1949) by de Gennes and several other French investigators In the case described by these French investigators, temporary suprarenal insufficiency accompanied pernicious anemia The diagnosis was established by the demonstration of diminished 17 ketosteroids in the urine The suprarenal insufficiency subsided following effective treatment of the pernicious anemia, and the authors assume that the suprarenal insufficiency was of the functional type A new case of concurrence of pernicious anemia and suprarenal insufficiency is reported in this paper Despite the rarity of this combination it must be decided whether the connection is causal, as was originally supposed Stephan contended that prolonged existence of suprarenal insufficiency almost invariably results in serious anemia and that the diseases are related Boenheim does not agree with Stephan, he stresses the essential difference in the etiology of these two diseases but nevertheless admits possible connections between them

Hospital, Rio de Janeiro

39 757-904 (June) 1951 **Partial Index**

•Good Tolerance and Favorable Results of Intravenous Iron Therapy N Passarelli —p 775
•Immunization Against Influenza J G Lacorte —p 785
•Intradermal Reaction with Polysaccharide Fraction Isolated from Culture of Leishmania Brasiliensis in Cases of Leishmaniasis Americana J Pellegrino —p 859

Results of Intravenous Iron Therapy.—A new iron preparation, sodium-di(α,μ-dihydroxy-β,β-dimethyl butyrate)-ferrate, containing 10 mg of trivalent iron per cubic centimeter, was administered intravenously to 16 patients aged 14 to 57, with hypochromic microcytic, normochromic, or pernicious (macrocytic) anemia The anemia was due to verminosis, nutritional deficiency, hemorrhages from gastroduodenal ulcer or pregnancy A dose of 2 cc. of the preparation was given either daily, every other day, or twice a day, for a total of six to 93 injections, according to the response of the blood The injections were well tolerated No immediate or late untoward reactions were observed after a total of 269 injections Hemoglobin and erythrocyte levels in blood increased in the patients with hypochromic anemia Pernicious anemia did not respond to intravenous iron therapy Among the other cases there were favorable results in six and negative results in three In one case, resistance to iron therapy developed In two cases of severe anemia an initial partial improvement, with rise of erythrocyte count and hemoglobin level, was followed by lack of response to the drug In another case, the blood picture improved after administration of vermifuges followed by oral iron therapy, which was then well tolerated The author concluded that intravenous injection of iron is indicated in all the cases of iron deficiency that do *not* respond to, or do not tolerate iron by mouth

Immunization Against Influenza.—The Virus Research Center of the Oswaldo Cruz Institute in Rio de Janeiro supplied 560,435 doses of influenza vaccine from 1945 until March 1951 These gave satisfactory immunizing results The vaccine contains viruses A and B (strain PR8 and LEE) and FM 1 of type A' The virus is inactivated with formaldehyde, in 1 10,000-1 5 000 dilution Single doses of 1 cc are administered subcutaneously They cause immunity lasting six months Reactions caused by the vaccine are rare, and there are no contraindications Incidence of influenza was smaller among those who were vaccinated during the epidemic outbreaks of 1945, 1949, and 1951 Among the difficulties in the preparation of vaccines are the multiplicity of types and strains of viruses isolated during different epidemics, a fact that shows the necessity of studying influenza on an international basis to understand its epidemiology and to prepare vaccines having the adequate antigenic structure To this end, strains of viruses from all over the world are sent by laboratories to the World Center for Influenza in London for study

Intradermal Reaction for Leishmaniasis Americana.—Pellegrino used Fuller's technique for isolating the polysaccharide fraction of Leishmania brasiliensis With this fraction he made intradermal inoculations in two cases of mucocutaneous leishmaniasis Intradermal inoculation was also done with an antigen prepared by suspension of a culture of Leishmania brasiliensis in sodium chloride solution containing sodium ethylmercurithiosalicylate (merthiolate®) in the proportion of 1 5 000 The reaction was strongly positive in both patients and with both antigens In six normal persons the reaction was negative

Klinische Wochenschrift, Heidelberg

29 397-428 (June 15) 1951 **Partial Index**

•Dualistic Endocrine Output of Insular System in Persons with Normal Carbohydrate Metabolism and in Patients with Disturbances of Carbohydrate Metabolism H Ferner —p 397
Electroencephalographic Observations in Internal Medicine J Moeller and O R Mantz.—p 400
Streptokinase Mechanism of Action and Possibilities of Clinical Application. T Halse —p 406

Dualistic Endocrine Output of Insular System —According to Ferner, there is a functional antagonism corresponding to the cytological dualism presented by the islands of Langerhans Glucagon, a glycogenolytic principle that increases the blood sugar originates in the alpha cells, while the beta cells produce insulin The quantitative proportion between the alpha and beta cells in a normal adult is 20% alpha cells and 80% beta cells This ratio occurs only when carbohydrate metabolism is normal as shown by the physiological level of the blood sugar, and any change in this ratio is associated with a disturbance of the carbohydrate metabolism Progressive hyperinsulinism develops in patients with insuloma that consists nearly exclusively of hyperactive giant beta cells In diabetes mellitus produced experimentally in animals by alloxan injections, partial pancreatectomy, or administration of massive doses of extracts of anterior pituitary lobe as well as in patients with diabetes mellitus, the ratio between alpha and beta cells is changed in favor of the alpha cells, from which the principle originates that increases the blood sugar The significantly increased number of alpha cells is the proximate cause of the hyperglycemia. The suggestion seems to be justified that a 'diabetogenic" change in the alpha-beta cell ratio may occur in diabetes mellitus under the influence of factors outside the pancreas

Lancet, London

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Spigelian Hernia Hernia Through Linea Semilunaris Report of Four Cases C Wakeley and P Childs —p 1290
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Metabolic Disorders in Head Injury Hyperchloraemia and Hypochloruria G Higgins W Lewin J R P O Brien and W H Taylor —p 1295
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Emotional Faint A D M Greenfield —p 1302
Complete Inversion of Appendix T H Boon and J C Sibley —p 1304
•Aetiology of Dupuytren s Contracture E. G Herzog —p 1305
Fatal Poisoning by Inhalation of Carbon Tetrachloride (Thawpit) E. B Love and A A Miller —p 1306

Etiology of Dupuytren's Contracture —Herzog saw 20 cases of Dupuytren s contracture at a 150 bed hospital in the course of two years Since many patients asked compensation on the ground that hard work had caused the contracture, the author investigated this problem Many literature reports suggest a hereditary predisposition, and a few observers recognize trauma from hard work as a possible contributory cause Herzog investigated the incidence of Dupuytren's contracture among 1,000 steelworkers 1,000 miners, and 1,000 clerks The respective figures for these groups were 24, 22 and 19 It was noted that most of the cases of Dupuytren s contractures occurred in men over 40, and considering only these, the percentages of incidence were 4 3%, 4 6%, and 3 75% for the three aforementioned groups The incidence varied greatly in different groups for instance, two cases were found in 25 bank clerks who were over 40 and no case among 136 miners, of whom 64 were over 40 For this reason the author feels that the slight difference in the incidence between clerks and workmen is of no significance He concludes that his investigation has produced no evidence that work in mines or steel mills leads to Dupuytren s contracture He does not think that claims for compensation are justified

Practitioner, London

166 425 526 (May) 1951

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BOOK REVIEWS

Diabetes Mellitus: Principles and Treatment By Garfield G Duncan, M.D Clinical Professor of Medicine Jefferson Medical College Philadelphia. With collaboration of Ferdinand Fetter M D Assistant Professor of Medicine University of Pennsylvania Philadelphia Perry S MacNeal M D Associate in Medicine Jefferson Medical College Philadelphia Barkley Beidleman M D Assistant in Medicine Jefferson Medical College Philadelphia, and Martha A Hunscher B S Director of Food Clinic Pennsylvania Hospital Philadelphia. Cloth $5 75 Pp 289 with 31 illustrations W B Saunders Company 218 W Washington Sq Philadelphia 5 7 Grape St Shaftesbury Ave London W C 2 1951

Dr Duncan's new contribution to the textbook literature on diabetes mellitus is a valuable guide for any physician The style of the volume is simple, and its contents are arranged in orderly fashion It is direct, concise, practical, accurate, and sound in its approach The wide experience of the author is detailed in so well-organized and clear a manner that his book will be a refreshing aid to all who are not too familiar with this fascinating disease but who wish to take advantage of modern methods of diagnosis and treatment

There are no superfluous details or elaborations, yet no important phases are neglected or omitted No personal preferences are stressed, and no prejudice is entertained Tables and diagrams are included in generous numbers For the most part they are informative and useful Illustrations, particularly of pathological phenomena, are faithfully descriptive

In conformance with the vast majority of experts in the field, the author insists on the wisdom of maintenance of good control as a probable preventive of complications He stresses the undesirability of obesity, the value of weight reduction and even some degree of undernutrition in treatment, and the preservation of sugar tolerance by control of weight and sugar levels The diet system outlined is quantitative, with a choice of weighing or measuring systems The new food exchange system approved by the American Diabetes Association is advised Indications for various types of insulin and the clinical results of their application are outlined clearly Complications, surgical management, and vascular disease are given adequate emphasis There is an excellent review of the important endocrine relationships in the physiology and clinical association of factors affecting regulation of the sugar balance Significant references to the literature conclude each chapter

A large amount of valuable pertinent information has been condensed into a relatively small volume with discrimination It may be recommended to students of the disease as a conservative and complete modern treatise on the subject

Post-Graduate Lectures on Orthopedic Diagnosis and Indications By Arthur Steindler M.D F.A C S Professor of Orthopedic Surgery State University of Iowa Iowa City Iowa Volume II Section A Paralytic Disabilities Section B Static Disabilities. Cloth $6 Pp 198 with 140 illustrations Charles C Thomas Publisher 301 327 E. Lawrence Ave Springfield Ill Blackwell Scientific Publications Ltd 49 Broad St Oxford England Ryerson Press 299 Queen St. W Toronto 2B 1951

Dr Steindler is well known in the field of orthopedic surgery His many writings have made him familiar to all orthopedists His writings are based on his vast experience and are evaluated by a keen scientific mind This book is a series of lectures for postgraduate students in orthopedic surgery This is part of a series of monographs and contains a section on paralytic disabilities and a section on static disabilities

Besides speaking from his own experience, the author also presents all concepts that are considered of value at the present time There is a nicely balanced record of the conservative and operative treatment of the conditions he discusses Under the subject of paralytic disabilities he covers poliomyelitis and its etiology, pathology, diagnosis, and treatment He discusses paralytic scoliosis The fourth lecture concerns spastic paralysis Under static disabilities he discusses low back pain, including idiopathic low back pain as well as back pain due to intervertebral discs He also discusses idiopathic scoliosis

There is a comprehensive lecture on internal derangements of the knee The mechanics of the foot are discussed In treatment the author refers to the usual recognized conservative and operative measures The subject matter is well arranged, and the type and paper are of excellent quality The illustrations are clear, well selected, and well reproduced There is a selected bibliography following each chapter Dr Steindler writes in a simple and clear manner This book expresses his concepts much more clearly than did some of his original scientific articles

Handbuch der inneren Medizin Herausgegeben von G v Bergmann und W Frey Unter Mitwirkung von H Schwiegk Begründet von L. Mohr und R Staehelin. Band II Blut und Blutkrankheiten Neu bearbeitet von Ludwig Heilmeyer Dr med O O Professor Direktor der medizinischen Universitätsklinik Freiburg i Br und Herbert Begemann Dr med., Leiter des hämatologischen Laboratoriums der medizinischen Universitätsklinik Freiburg i Br Band VIII Nieren und ableitende Harnwege Die hämatogenen Nierenerkrankungen Die ein und beidseitig auftretenden Nierenkrankheiten. Erkrankungen der Blase der Prostata der Hoden und Nebenhoden der Samenblasen, funktionelle Sexualstörungen bearbeitet von Walter Frey und Friedrich Suter Fourth edition Cloth Pp 1179 with 474 illustrations 1167 with 193 illustrations. Springer Verlag Reichpietschufer 20 Berlin W 35 (West Berlin) Neuenheimer Landstrasse 24 Heidelberg Göttingen 1951

This is Volume 2 of the well known Manual on Internal Medicine" originally edited by Mohr and Staehelin It could be called a system rather than a manual, for it covers the field of internal medicine in detail, with extensive documentation It is a useful reference work The present editors are recognized internists fully competent to carry on the traditions of the original work In the introductory remarks the editors comment on the desirability of the Morgagnian concept of pathological anatomy as a basis for the study of disease but point out that the blood is not an organ and that its diseases are reflections of abnormalities in the blood forming organs The work opens with a general section discussing the composition of the whole blood, including its total volume, the plasma, the general cytology and bone marrow physiology, and the technique and general results of spleen and lymph node puncture Then follow chapters on the morphology and physiology of the erythrocyte system, the formation and destruction of red blood cells and hemoglobin, and a discussion of blood grouping and transfusion This is followed by discussions of the special diseases of the red blood cells, and the different types of anemia and polycythemia, their symptomatology, diagnosis, prognosis, and treatment The leucocytes and the reticuloendothelial system are then discussed in their morphological and physiological aspects and in respect to hereditary and acquired diseases, with a special discussion of the x ray treatment of Hodgkin s disease There are sections on the hemorrhagic diatheses, the diseases producing abnormalities in clot formation, the aplastic and hypoplastic myelopathies, and blood parasites An appendix on diseases of the spleen and the lymph nodes concludes the volume

The book is attractively bound, and the paper and typography are excellent. The illustrations, many of them colored, are of high quality, and the text is not difficult to read There is abundant evidence that the writers have consulted medical literature widely and have given due credit to contributors. While the arrangement differs somewhat from American works of similar scope, it is logical and satisfactory The book can be recommended as a competent and well-documented survey of the field

Volume 8 of the fourth edition is contributed by competent workers in the field of kidney diseases and diseases of other sections of the genitourinary tract The volume opens with a historical chapter that covers the period of Malpighi and also discusses the work of his successors, notably Ruysch, Haller, Bowman, Johannes Müller, Bichat, Henle, Ludwig, Bright, Virchow, Abel, and Volhard and Fahr The chapter contains illumi

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The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated

nating discussions of the different forms of Bright's disease. Following this chapter there are sections dealing with anatomic and physiological bases of the different types of hematogenous kidney diseases, with discussions of the various chemical and functional tests Then follows a short section on the theories of urine formation, with special stress on such modern concepts as contact and electrical potential and discussions of the important experimental and clinical studies of urinary secretion Succeeding sections cover the clinical aspects of the nephropathies, with competent discussions of such characteristic symptoms as hematuria, pyuria, renal hypertension, edema, and uremia There are adequate discussions of the course, prognosis, and treatment of kidney disease and special sections on the arteriosclerotic contracted kidney Dr Suter, in the final third of the volume, discusses competently the so-called surgical kidney affections diseases of the bladder, the prostate, the testis and epididymis, the seminal vesicles, and functional sexual disturbances

As in preceding volumes the book is attractively bound, the paper is of excellent quality, the typography is clear, and the accompanying charts and tables, including an elaborate list of foodstuffs with their caloric values and chemical composition are well-chosen and helpful There are gross and microscopic illustrations of the normal kidney and the nephropathies and some excellent colored illustrations of cystoscopic findings The literature is extensive, and there are good name and subject indexes The articles are clearly written and the work should serve not only as a textbook but also as a reference book

A Review of Medicine by Members of the Faculty Northwestern University Medical School Edited by Benjamin Boshes, M D M.S Ph D Associate Professor of Nervous and Mental Diseases Northwestern University Medical School Chicago Sixth edition. Cloth. $15 Pp 814 [University Bookstore Northwestern University] 434 E. Huron St. Chicago 11 1951

This large volume is essentially an outline of clinical medicine, including surgery, obstetrics and gynecology, and the various medical and surgical specialties intended to assist medical students in preparing for examinations and to provide interns, residents, and general practitioners with a ready source of reference for a wide variety of medical problems The value of the work appears to be established, since it has gone through so many editions over a period of 18 years

The first edition (1934) consisted of material given in a series of lectures at Northwestern to prepare students for the annual examinations for the Cook County Hospital internship Through subsequent editions new subjects and new sections were added, extraneous material was deleted, and the format was modified. A complete revision and reorganization was accomplished with the fourth edition, in 1940 This edition is, again, essentially a new book New sections have been incorporated, other sections have been rewritten, and many new names appear in the list of contributors This is neither a textbook nor a monograph Its original purpose and style remain It is an elastic compilation of data taught in the classrooms of Northwestern, each section written by a specialist The style of presentation usually follows a modified outline form, but some sections are in essay style The content has been brought completely up to-date

The book is large and bulky but the type is good, and the spacing adequate for quick reading There is a satisfactory index, but no bibliography and no illustrations For the student or intern who wishes to review for state board examinations, this volume will require supplementation since it does not contain sections on the preclinical sciences

Selected Writings of Sir William Osler, 12 July 1849 to 29 December 1919 With introduction by G L. Keynes, M D F R.C.S Cloth $4 Pp 278 Oxford University Press, 114 5th Ave New York 11 Amen House Warwick Sq , London, E.C.4 1951

One of the best things that could happen to a medical student would be to become interested in the life and work of Sir William Osler His influence on the medical profession is still strong although he has been dead more than 30 years His life provides a pattern that physicians could well follow While a bibliography of his writings would contain hundreds of items, in this book are collected only a few of his more or less philosophical essays These essays were chosen by a committee "to give the medical student a taste of Osler' They will find here, not the pathologist or the clinical professor, but Osler the essayist and historian The introductory chapter comprises an interesting but short biography

The Mark of Oppression: A Psychosocial Study of the American Negro. By Abram Kardiner M D and Lionel Ovesey M.D (Research on which this book is based was done with technical assistance of William Goldfarb Robert Gutman, Ethel D Kardiner and Zeborah Suesholtz.) Cloth $5 Pp 396. W W Norton & Company Inc. 101 Fifth Ave New York 3 1951

In the Mark of Oppression, Kardiner and Ovesey have given a psychodynamic analysis of Negro adaptation that furnishes a clear understanding of why Negroes react to many situations in the way they do This careful scientific study, using a new methodology, is a contribution to the study of behavior problems that is as important in what it reveals about other segments of the population as it is significant in evaluating the basis of Negro reactions According to the authors, 'This book is conceived and written as an inquiry not as a polemic It is conceived and written on the premise that group characteristics are adaptive in nature and therefore not in born but acquired '

The source material for this book is an intensive case study of 25 Negroes, all obtained by the psychoanalytic interview method An adequate basis for intelligent understanding and digestion of this material is presented in Part 1 The White Man and the Negro, A Comparative Sociology, The Social Environment of the White Man and the Social Environment of the Negro This in itself is a noteworthy and scientifically sound contribution Part 2 the personality studies of 25 Negroes drawn from the lower, middle, and upper classes, the adolescent and neurotic sampling give ample material for extensive elaboration

Rorschach test interpretations made by William Goldfarb substantiated the findings and hypotheses of Kardiner and Ovesey In the synthesis of experimental data, the authors make the following observation 'Nor must we overlook what is perhaps the most important lesson in this study The defects of adaptation that we have described, together with their social sources, make a dismal picture of human misery, one for which it is hard to find a parallel However, in spite of its defects when compared to white standards, we must not forget that in the face of such hardships it is a heroic achievement to be able to adjust and to survive The authors have often been amazed at the remarkable ingenuity and stamina that most of these subjects showed, and each of the authors has privately thought that under similar conditions of living neither could have done as well "

Kardiner and Ovesey have made a valuable contribution in a field in which they are recognized authorities They have also performed a signal service to mankind perhaps at present not fully appreciated

All who are interested in man and his relation to his fellow men can read this book with profit

Administrative Medicine Haven Emerson A. M M D editor New edition. Cloth. $10 Pp 1007 Thomas Nelson & Sons 19 E. 47th St New York 17 Parkside Works Dalkeith Road Edinburgh 9 1951

This book is intended to be used as a reference by medical administrators and by advanced students who are preparing for work as medical administrators It has the usual advantage and disadvantages of a compilation The breadth of its scope is such that no one person could have written it Dr Emerson had done well in the choice of the various experts who have contributed and he has succeeded in producing a harmonious whole The authors are men of actual experience in the field covered They are men of sane and conservative views and completely worthy to be considered experts in their respective fields Dr Emerson is well known as a man of sound judgment in matters pertaining to health and medical administration Any views that he may have sponsored in a book of this sort are well worthy of earnest consideration by those in positions of responsibility

Here is a book which should become a *vade mecum* on the desk of medical administrators So far as we know there is no other book available covering exactly this field in so complete a manner We recommend it highly as a well written, carefully planned and edited book loaded with useful information and sound administrative principles It should have wide use

QUERIES AND MINOR NOTES

REFRIGERATED BLOOD AND TRANSFUSIONS

To the Editor —*Is refrigerated blood as free of adverse reaction in the patient when given at room temperature or body temperature as it is when given directly from the refrigerator without preliminary warming? Does refrigerated blood cause any more reactions than warm blood from the donor?*

H S Puckett M D Stillwater, Okla

Answer —Refrigerated blood may be given to a patient, under ordinary circumstances by standard methods and at a normal rate (about 10 cc per minute) without fear of adverse reaction, even though the blood is not warmed to room temperature or to body temperature before administration Numerous measurements have shown that, by the time the blood has traversed the relatively long recipient s tube and the needle, its temperature has risen from the original 4 to 6 C, at which it may leave the refrigerator, to 15 to 20 C It is then warmed relatively rapidly as it flows into the body, so that there is no appreciable effect on the patient There is no evidence that increase in reaction rate results from this In fact, blood that has been kept cold up to the time of administration is probably safer, for if the blood is warmed too rapidly as in a water bath at over 40 C, there is greater likelihood that many of the cells, particularly those in contact with the glass, will be destroyed and a higher percentage of hemolysis will result One other danger is that, if the blood is kept standing at room temperature or in a 37 C water bath for a considerable time, any contamination that has occurred will permit the growth of organisms and lead to a serious reaction Even in patients with shock, there is no need to warm the blood

There are two possible dangers from the use of cold blood If the transfusion is given very rapidly as occasionally occurs on the operating table with the injection of a pint (473 cc) of blood at a temperature of 6 to 10 C within a period of 15 or 20 minutes, the patient s extremity into which the blood is running may be rapidly cooled and this may cause a mild sensation of chilliness Even under these circumstances, one rarely sees any signs of reaction The other possibility that has some times been considered serious is that if a patient has a high titer of cold agglutinins as after viral pneumonia the injection of refrigerated blood may allow such cold agglutinins (which occasionally are active even at 20 C) to produce clumping of the infused cells and result in a transfusion reaction It may, therefore, be advisable to administer a transfusion relatively slowly (certainly not over 10 cc per minute) to a patient known to have cold agglutinins, or if these are active even at room temperature, to warm the blood before transfusion

The common practice of heating the blood rapidly after it has been removed from the refrigerator, especially by immersing it in a pan of hot water, is to be avoided under all circumstances, because of the danger of destroying red cells by rapid changes in temperature or even heating in excess of 37 C Also the practice of allowing blood to stand for several hours at room temperature, until it is decided whether the patient is to receive a transfusion, should be avoided Finally, returning blood, once warmed, to the refrigerator should not be permitted Such drastic changes in temperature are likely to cause destruction or serious injury to many of the red cells, with loss of value to the recipient when such blood is subsequently used

ALBINISM

To the Editor —*Can anything be done to an albino child to improve his tolerance to light?*

F Vela Gonzalez, M D , Monterrey, N L , Mex

Answer —Complete albinism results from congenital absence of pigment throughout the entire body The skin is milky white or has a pinkish tinge, the hair is white or whitish yellow, and there is a similar deficiency of pigment in the eyes The iris has a dull, pearly gray appearance, and the pupil may appear red in natural light Unfortunately, because of the absence of pigment, nothing can be done to improve tolerance of an albino child to light Standard textbooks make such statements as the following As may readily be inferred, albinismus cannot be lessened or influenced by treatment—it is, in fact, without remedy ' The only measures that are helpful are protection of the skin from excessive exposure to sunlight and especially protection of the eyes from excessive amounts of light by use of sun glasses

ATROPHIC PHARYNGITIS

To the Editor —*A woman, 66, has complained of dryness of her throat for four months Her family physician has prescribed every antibiotic and other type of lozenge available on the market with no effect When I saw the patient two months ago the posterior pharyngeal wall had a dry glistening appearance, with obvious atrophy of the mucosa and some small, reddish granular nodules I have seen this condition frequently in elderly women Is this an atrophic pharyngitis on the basis of an endocrine disturbance or a degenerative process?*

M D Massachusetts

Answer —In atrophic pharyngitis (pharyngitis sicca), an entity often associated with atrophic rhinitis, the posterior wall of the pharynx has a lusterless glazed appearance in mild cases and there is advanced atrophy of the mucous membrane with dry crust formation and fetor, in advanced cases The patient afflicted with atrophic rhinitis has a sense of considerable dryness in the throat To dislodge the adherent secretion on the posterior pharyngeal wall, some patients will make frequent attempts to clear the throat by hawking retching and sometimes by vomiting Consequently, a chronic sore throat is not an unusual accompaniment Although the cause is unknown, occasionally an endocrine relationship is suggested by the basal metabolic rate In elderly patients a more plausible explanation is that the disease is due to a degenerative process

As in the case of atrophic rhinitis, treatment is directed toward the alleviation of symptoms, since it is currently impossible to regenerate atrophied pharyngeal mucous membrane Medication is similar to that used for chronic pharyngitis In conjunction with treatment of atrophic rhinitis if this condition is present treatment of the pharyngeal wall may include the local application of Mandl s solution or tincture of iodine in glycerin (1 to 7 parts) These preparations stimulate secretion At the same time, potassium iodide may be given internally An average dose is 10 drops of a saturated solution, to be taken three times daily with meals The inspiration of warm, moist air from a kettle, vaporizer or basin helps moisten inspissated secretion Attention to general health should, of course, receive consideration

FAILURE IN SENSATION FROM BLADDER DISTENTION

To the Editor —*A patient has no sensation of the need of emptying the bladder He knows when the bladder is full only by feeling the end of the penis and when in bed by a pain in the left hip I shall be grateful for suggestions for treatment in such a case*

Louis L Sherman M D , Oakland, Calif

Answer —Failure in sensation from bladder distention occasionally is observed as the first clinical sign of lesions involving the spinal cord Among the possible diseases that might be mentioned are tabes, multiple sclerosis, neoplasm, and other lesions involving the central nervous system In the absence of any other clinical data it is impossible to make an exact diagnosis in this case or to advise treatment The services of a competent neurologist are recommended, who, with the help of roentgenologic, urologic, and other data, could give accurate counsel

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The answers here published have been prepared by competent authorities. They do not however represent the opinions of any official bodies unless specifically stated in the reply Anonymous communications and queries on postal cards cannot be answered Every letter must contain the writer s name and address but these will be omitted on request

PAROXYSMAL AURICULAR TACHYCARDIA

To the Editor—*Since childhood I have been troubled with recurrent paroxysmal tachycardia I am now 75 years old Often, in turning my head to the left, a slight fainting feeling results Just before and during the attack the right carotid sinus region pulsates much more than does the left Pressure on the carotid sinus does not stop the attack Before an attack, there is a weak feeling in the umbilical region and little, if any, signs or symptoms in the region of the heart There are no anginal or coronary obstruction symptoms and none of any organic heart lesion Blood pressure is a trifle above normal Would procaine hydrochloride injection be indicated in the right or left carotid sinus if the attack lasts too long? Can you suggest any treatment to stop that abdominal starter from starting the auricle at double speed? I use cinchona alkaloids whenever needed I eat five small meals a day because I have noticed that a large meal (or a large evacuation) helps start an attack, especially in the morning Please suggest treatment and prevention*

M D Oklahoma

Answer —Any patient who has a history of recurrent attacks of rapid, regular heart action, setting in suddenly, having been present since childhood and displaying no evidence of organic heart disease, may be considered as having paroxysmal auricular tachycardia Procedures such as pressure on the carotid sinus, pressure on the eye ball, the induction of gagging or vomiting, and attempted expiration with a closed glottis (Valsalva's experiment) may be often successful when used singly or in combination When these measures fail and the tachycardia persists for hours, digitalis, quinidine or the highly potent mecholyl (dangerous in infants and elderly subjects) can be tried There are also favorable reports on the use of neostigmine and phenylephrine (Neo-Synephrine®) hydrochloride Procaine injection to the upper thoracic ganglions has been used in several instances, but it does not always stop the attack

The purpose of all these measures is to stimulate the vagus or inhibit the cardiac accelerators Injection to the carotid sinus would not serve such a purpose One of the triggers in bringing on the attack is overdistention of the stomach or hypoglycemia Nothing better than frequent small meals can be suggested Self-medication is fraught with danger

LEUKOPLAKIA BUCCALIS

To the Editor —*A man, 57, has had leukoplakia buccalis for about half a year It is especially pronounced on the left side of the tongue and cheek It subsides somewhat after he abstains from smoking for a couple of weeks and becomes more pronounced a few days after he resumes smoking Is smoking absolutely to be prohibited? What are the possibilities of the formation of a cancer? Is any therapy indicated?*

Samuel Barmak, M.D , Brooklyn N Y

Answer —Leukoplakia is a clinical term meaning "white plaque" It is the response of a mucous membrane to some form of chronic irritation Smoking occasionally causes such a lesion The case of which you write seems to fit this category Certain forms of leukoplakia are considered to be "precancerous lesions " When following microscopic examination the pathologist reports leukoplakia he usually means more than a simple white spot namely, there is evidence of dyskeratosis A biopsy is indicated in any lesion that seems at all suspicious, particularly in those in which any thickening is found

PROSTATIC HYPERTROPHY

To the Editor —*Have estrogens or other hormones been tried to prevent hypertrophy of the prostate? Since estrogens are helpful in cancer of the prostate, it might be logical to use them in hypertrophy*

J Minkin M D Bronx, N Y

Answer —There is no way to prevent hypertrophy of the prostate Hormones have never prevented or cured benign hypertrophy of the prostate, they have, however, been of great value in the treatment of cancer of the prostate

A "SIXTH" LUMBAR VERTE

To the Editor —*An x-ray report was nosis of 6 lumbar vertebrae, and ver* tion *taken of only the lumbosacral area, without view One specialist without making a coun vertebrae, said that since there were six vertebra* Trustees *appearance of lumbar vertebrae, the diagnosis was Indeed there were six visible vertebrae without evidence any rudimentary rib structures We would all like to know the criteria for making such a diagnosis and whether if only 11 vertebrae with articulating ribs are shown by further x-ray studies, the vertebra in question should be called an extra lumbar or a 12th dorsal sans rib attachments*

Don Dieter, M D Salina Kan

Answer —The question as to the criteria for diagnosing a sixth lumbar vertebra is really a question in semantics rather than in radiology or anatomy, and if one is worried about it he can avoid the difficulty by substituting the term non rib bearing presacral vertebra' The idea that an examination of the entire spinal column will resolve the difficulty is not sound and it is an expensive procedure that ought to be avoided if possible If a patient is found to have six non rib bearing presacral vertebrae and a short sacrum, it is common to describe the lowest nonsacralized segment as a lumbarized first sacral If the sacrum appears to be of normal length the extra segment is usually described as a sixth lumbar

RUSTY NAIL WOUND

To the Editor —*What is the best local treatment for a puncture wound of the sole of the foot by a rusty nail? The nail entered to a depth of a quarter of an inch and no complications have set in*

M D California

Answer.—Bowen (J A M A 119 413 [May 30] 1942) recommended the following treatment 1 The foot is to be soaked for 15 to 30 min in hot water to which tincture of soft soap is added 2 It is dried carefully, and an area about 2 to 3 in (5 08 to 7 62 cm) in diameter around the wound is painted with an appropriate antiseptic 3 The top layer of the skin is cut away around the wound, resulting in exposure of foreign matter (usually sand, rarely particles of sock, leather, rubber or concrete), which can be removed easily 4 A dry dressing is applied 5 If the wound is caused by a nail larger than a ten penny nail, the patient should not walk for at least one or two days, but if a nail of lesser diameter is involved, he may walk at once

In addition to the above local management, the appropriate use of tetanus antitoxin and tetanus toxoid (Skin Test Technic, Queries and Minor Notes J A M A 139 68 [Jan 1] 1949) is indicated Too much reliance must not be placed on the local and parenteral use of penicillin to prevent tetanus

POLYCYSTIC KIDNEYS

To the Editor —*A patient 52 has polycystic kidneys Her nonprotein nitrogen has been consistently normal despite the fact that x rays show considerable diminution of kidney tissue Blood pressure is normal there is no edema the daily amount of urine is normal and body weight remains constant The patient seems in good health Textbooks are vague on the subject and give a gloomy prognosis Can you suggest anything in the way of treatment?*

M.D Florida

Answer.—This patient has a good prognosis in view of her normal blood pressure and blood nonprotein nitrogen at age 52 If she is asymptomatic, there is no reason for any specific treatment for polycystic kidneys Renal function should be checked from time to time, so that necessary dietary adjustments may be made The urine should be watched for evidence of infection or hemorrhage If the former occurs antibiotic therapy is indicated varying with the nature of the micro-organism Persons with polycystic kidneys may achieve a normal life expectancy if renal function is well preserved into the sixth decade

REFRIGERA ATED

To the E tion possibility of the lice through skin toclaving our skin of the blade We at our corks became known to be effective other disadvantages? A Company, extolling the ctant, has suggested the erial might be adequate

, Santa Barbara, Calif

van Rooyen (Textbook of Virology son & Sons, 1949) state that virus-contami be sterilized by immersion in chemical solutions, gators believe that such measures are not adequate ain destruction of the viruses, particularly in the presence of organic substances

Neefe (*M Clin North America,* Philadelphia Number, November, 1946) reported that the virus of homologous serum jaundice, in human albumin, is inactivated by heating for 10 hours at 60 C (140 F) Heat is therefore recommended for the disinfection of blood-contaminated lancets, needles, and syringes, despite its deleterious effect on the temper of the metals The piercing properties of lancets and needles are easily restored by use of an emery stone The straight Hagedorn No 6 needle is probably more adaptable to reconditioning than is the type of blade indicated above The point of the lancet should not be inserted into a cork during disinfection or sterilization procedures

Immersion of previously cleaned instruments in boiling water for 15 minutes will destroy the virus of homologous serum jaundice Dry heat sterilization requires a longer interval at a comparable temperature Specific procedures employing heat disinfection of lancets, needles, and syringes are described in The Journal of June 11, 1949, page 579, and Dec 2, 1950, page 1226

CALCIFICATION OF SOFT TISSUES

To the Editor —*A man, 50, has calcification of the tissues of one hip as indicated by x-rays The hip was a little swollen, but there was no pain In the course of his work, he repeatedly strikes this part of his body against a machine Please advise whether any treatment is available* *M D, Connecticut*

Answer.—Calcification of the soft tissues around the hip is rather infrequently seen If the calcification is lateral to the greater trochanter, it may represent calcium deposits in the trochanteric bursa, which is similar to calcium deposits in other bursa of the body, particularly in the region of the shoulder Sometimes these respond to x ray therapy, but occasionally surgical excision is necessary for the eradication of the condition But, assuming the patient is having no pain and the diagnosis is definitely established as bursitis, probably no treatment would be necessary If the calcium is deposited elsewhere, particularly around the neck of the femur, it probably is a case of calcification of the muscles and might be the forerunner of myositis ossificans However, without having an opportunity to review the x-rays, it is impossible for one to make an accurate diagnosis

DUOCHROME REFRACTION TEST

To the Editor —*I desire information on a method used in refraction of the eye, to see if the prescription is correct In this test, red and green letters are shown the patient wearing the glasses if he sees one of the colors best, he is supposedly on the myopic side if the other letters are seen best he is on the hyperopic side I have not been able to find this information in any book at my disposal*

L Murphy Henry, M.D, Fort Smith, Ark

Answer —The emmetropic light adapted eye is most sharply focused for the spectral color of highest luminosity, which, for the average eye is yellow of 555 mμ wavelength When thus focused, red and green rays at equal wavelength distance from this point of the spectrum form aberration disks of equal diameter This observation, made by Helmholtz, is the basis of the original duochrome refraction test introduced by Clifford Brown of London in 1927 and described by H H Emsley (Visual Optics, London, Hatton Press, 1936) The application has been simplified in the projectochart apparatus, which contains an accessory transparent slide, half red and half green of the proper hues When in use the visual chart is divided laterally by superimposed red and green light The eye, if emmetropic or made so, sees the letters equally well on both backgrounds, but, if excessive plus power has been added, the letters on the red background will be in focus nearer to the retina and will be seen more clearly than the letters on the green background and vice versa The indication, therefore, is to add minus power if the letters on the red background appear clearer and plus power when the letters on the green background are the more distinct In the brochures furnished by manufacturers of projectocharts, this technique is fully explained Following a suggestion of Maddox, Lebensohn has adapted the duochrome principle to the near vision test chart as a help in the precise determination of the presbyopic addition (*Am J Ophth* 32.22 [Jan] 1949)

AMENORRHEA FOLLOWING MISSED ABORTION

To the Editor —*Why does a woman suffering a missed abortion not menstruate, even though the condition may go on for months or years? I am anxious to know the various opinions that this question should bring forth* *M D, Illinois*

This inquiry was referred to two authorities, whose respective replies follow —Ed

Answer —In missed abortion with death of the fetus, there still may be placental tissue attached to the uterus, which may give rise to enough estrogen production to suppress menstruation

Answer —The endocrinal mechanism that regulates cyclical activity in the ovary and reproduction is only partially understood Following is the most reasonable and current explanation In the normal cycle, FSH from the anterior lobe of the pituitary gland stimulates follicle growth Prior to ovulation a widespread atresia of the secondary follicles occurs, which eliminates all except the dominant follicle and provides a spurt in estrogen production which stimulates the release of LH by the pituitary This gonadotropin induces ovulation of the dominant follicle and corpus luteum formation The life of the corpus luteum is about 14 days, and its regression results in a drop in the level of estrogens and progestin which brings on menstruation

If pregnancy occurs, chorionic gonadotropin elaborated by the young conceptus prolongs the life of the corpus luteum until such time as the placenta is sufficiently developed to take over the production of the steroid hormones Experimentally, chorionic gonadotropin administered to a woman during the progestational phase of the cycle will postpone menstruation 10 days or longer, because the corpus luteum remains functional

After the death of the embryo in missed abortion, viable chorionic tissue may continue to produce progestin for many weeks This can be followed by the quantitative determination of urinary pregnanediol When the pregnanediol output has reached a low level or disappears completely, the uterus usually expels its contents The disappearance of progestin allows the LH factor in the pituitary to again assert itself, and follicular activity, ovulation, and menstruation are resumed

MUSCULAR DYSTROPHY

To the Editor —*What should be done in the way of supportive therapy in muscular dystrophy? Is intensive physical therapy requiring hospitalization beneficial?*

Warren G Strout, M D, Pittsfield Maine

Answer —Unfortunately, no form of treatment is of value in cases of progressive muscular dystrophy There is no evidence that physical therapy has any beneficial effect Certainly there would be no justification for hospitalization and intensive therapy of this type

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NEUROLOGY AND HUMAN EMOTIONS

CHAIRMAN'S ADDRESS

Louis J Karnosh, M D , Cleveland

In the family of medical specialties, clinical neurology has often been regarded as a sibling whose duty is to play an ancillary role to its nearest kin, psychiatry, internal medicine and neurosurgery It has been facetiously called a fading spinster living in a back bedroom and walking with a soft and gingerly tread Compared with the lusty, brilliant and occasionally fustian activities of modern psychiatry, contrasted with the brisk, youthful and productive efficiency of neurosurgery and with the dramatic urgencies of internal medicine, the demeanor of clinical neurology, until in very recent years, has bordered on the lustreless

This is reflected in the impressions entertained about neurology by the public To many a man-on-the-street be he well-informed about medicine or otherwise the specialty of neurology is not clearly defined or even known to exist as such Very few neurologists have escaped being confronted by this most disconcerting question, "If you are not a brain surgeon or a psychiatrist, then just exactly what sort of a brain specialist are you?"

This seeming modesty on the part of neurology and its desire to keep out of the glaring limelight, while creditable from the standpoint of ethics, is often not entirely a virtue, for it can be a device for concealing certain shortcomings and a cover for an undesirable timidity, reticence or even inertia

Perhaps, a good example of the "gingerly tread" of clinical neurology is its attitude toward committing itself in a concerted manner on the anatomy, physiology, and pathology of the emotional nervous system In this day when people are informed in every popular magazine that the emotional problems of man are productive of more misery than all other human ailments combined when the chief casualties of modern wars are emotional disturbances, neurology has, with one or two notable exceptions, remained almost in a state of "akinetic mutism" in reference to this particular subject

This charge, if it be accepted as such, does not imply that neurology should stoop to cheap opportunism and produced a flood of empiricisms about the anatomy and physiology of the emotions However, it seems that it is the duty of this specialty to organize and correlate its available, authentic data on the emotions and to submit them, however incomplete, to both the practising physician and the educated layman, if for no other reason than to temper rank misconceptions and absurd misapplications The immense popularization of medical knowledge has made many laymen more intelligent and unhappily, in direct proportion, often more credulous The conservative contributions of neurology to the story of human emotions should be an antidote to that credulity and, in a measure, should offset the bad influence of misguided theories and practices dealing with emotional disorders An excellent example of this approach to the organic story of the emotions is the recent publication by Dr Stanley Cobb [1] of his book entitled "Emotions and Clinical Medicine "

The intelligent layman is here to stay He is interested in the specific mechanisms of the brain as much as, if not more than, he is in what is, through metonymy, called mind He is as anxious to know where and how emotions operate as he is to learn how and why hydrochloric acid is produced in the stomach In spite of the current emphasis on unity of mind and body, he remains aware of his emotions as an experience apart from his intellect and his body functions He is aware of the potent effect of his emotions on his behavior, he senses them as a distinct and powerful internal process and, in a vague manner, he knows of their impact on his visceral organs

In all this setting of desire on the part of both physician and layman for knowledge about how man emotes and about what structures in the brain and what physiological devices therein produce emotions, practically every standard text on neurology says nothing Out of 10 textbooks on basic and clinical neurology, the word "emotion" was found in the index in only two of them, and the references were single ones In two outstanding texts on neurophysiology, that word was indexed with two references, and both had to do with a brief comment on vascular reflexes and hypothalamic discharge, one of these harking back to Sherrington's work in 1900

In other words, if one is to be guided by modern texts in neurology and neurophysiology, one is justified in concluding that the emotions have no major representation

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Read before the Section on Nervous and Mental Diseases at the One Hundredth Annual Session of the American Medical Association Atlantic City June 14 1951

[1] Cobb S Emotions and Clinical Medicine New York W W Norton & Co Inc 1950

in the central nervous system and, what is more puzzling, that organic diseases of the emotions do not exist This nihilistic notion denying an organic substratum for the emotions is carried over into clinical practice where the very term "emotional disorder" invariably connotes a functional disease Psychosomatic medicine has done little to change this concept, for it has emphasized that the primary factors are always psychogenic and has conceded a pathology only in the end organs controlled by the autonomic nervous system The two most popular treatises on psychosomatic medicine offer very little on the integration of emotions in the central nervous system, only one of them stressing the significance of the hypothalamus

The neurologist's reticence in committing himself about emotional anatomy and physiology could be explained by several factors, most of which are my own speculations and interpretations

First, the neurologist, no matter how much he may deny it, is inhibited by the old concept that to accept emotions as stemming from a true neural mechanism is a threat to the sanctuary of integrality of mind The doctrine of mind as an indivisible whole is cherished by all schools of psychology and by many psychiatrists for the simple and very practical reason that their techniques lend themselves only to handling the human mind as a nonfractionated unit Few neurologists have ventured to defy this creed of integrality of mind It still takes a special courage bordering on academic recklessness to suggest a purely neural or engram basis for mind and emotion in human subjects, when it is known that such a venture will be assailed by the proponents of "personality as a whole" on the one hand and by ultracautious experimental neurophysiologists on the other

A second factor in causing neglect of the clinical study of human emotions is inherent in the very nature of emotional behavior, probably the greatest deterrent of all Self-observation of emotional behavier is useless, an impassioned person is too much "beside himself" to study his emotions, and when reflection and insight are good, there are no passions to study Since the first reports of Lange, the life of feelings remains an elusive thing to the discriminative elements of mind Nor are objective emotional reactions in others any more readily recognized The motor expression of emotions is so spontaneous, so infectious, and so liable to interpretation as a total mass pattern conveying a particular inner feeling, that, intrinsically, the analysis of a particular muscular activity is rarely possible For one human being to make a cool and detached observation of spontaneous emotional behavior in another requires an unusual temperament and special techniques which are difficult to apply

A third handicap in the neurological analysis of emotional integration is the wide gap which exists between human and animal brain physiology Experimental neurophysiology has produced a vast amount of data on the emotional nervous system but has been too cautious about recording it as such Piecemeal, the experimental results have been presented in the guise of rage reactions, grimaces, akinetic mutism, poverty of animation, absence of generalized movements, lack of defensive movements, postural rigidities, respiratory arrhythmias, and a wide array of autonomic discharges, all of which can be called expression of emotional activity It can also be said that animal experiments on emotions are too objective, while experiments on humans are too subjective, and the results of the two are almost impossible to synthesize

Finally, there is a fourth factor which retards more complete knowledge of emotional neurophysiology and pathology It is the unique anatomical complex which is the nexus of the emotions This term "nexus," which means a bond or tie between the several members of a group or series, is used advisedly in order to avoid the term "center of the emotions" which is eschewed by all good neurologists The nearer the experimental neurophysiologist gets to this nexus or even the nearer he gets to something which could be regarded as a center, the more he finds himself dealing with a primordial nervous system that knows no nicely myelinated tracts, no clearly defined nuclear masses, but, instead, a veritable bramble bush of reticular and nonmyelinated maze Here he also finds cortical, subcortical and bulbar pathways of meagre structure involved in elaborate circuits which seem to know no end The matrix of reticular and tiny nuclear tissues has been successfully penetrated only by the stereotaxic apparatus first devised by Horsely and Clarke, only few modifications of which have so far been applied to humans, namely, in the study of the thalamus by Spiegel [2] and his associates In animals, the experimental results in terms of emotional physiology are merely tidbits of information which can be assembled only with painful care and with all the misgivings of academic doubt and experimental groping

These constitute the main handicaps which furnish the neurologist an apologia for failing to bring forth a clear understanding of the organic basis of the emotions

The reflections recorded here are not a scholarly ensemble or the results of highly organized experimental work, but are rather the homely observations of everyday practice in clinical neurology

For the sake of semantics and clarity of what is meant by emotion, the sublimely simple definition of Professor John R Reid in the preface of Cobb's book is offered at this juncture "Both the feeling and the behavior that expresses it, as well as the internal physiological responses to the stimulus-situation, constitute a dynamically interrelated whole, which is the emotion " To the neurologists, therefore, there are three phases of emotion (*a*) the subjective private feeling, (*b*) the discharge into the visceral nervous system, and (*c*) the motor component in bodily, overt behavior

SUBJECTIVE PHASE OF EMOTIONS

On the subjective side of emotion, animals give us too little data and humans too much or, more accurately, too much elaboration of pure, primal emotion

Neurologists should consider the meaning and significance of the term cenesthesia, which is found more often in foreign medical treatises than it is in those of this country Cenesthesia is the general feeling of being in the body or of bodily consciousness without reference to any part or any specific sensation. It can be said with axiomatic conviction that to be conscious of any extraneous stimulus, one must first be conscious of oneself as a total diffuse sense of merely being Cenesthesia therefore, can be called the irreducible level of all consciousness No outside stimulus reaches any level of consciousness unless it is infused with this element of cenesthesia

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[2] Spiegel E A. The Central Mechanism of Emotions, American Psychiatric Association Annual Meeting Cincinnati May 7 11 1951

How cenesthesia is created is or should be one of neurology's most urgent problems Whether the homeostatic centers of the hypothalamus furnish it through their humoro-sensitive capacities rather than through afferent systems from the viscera is still an open question Verney's [3] demonstration of osmoreceptors in the supraoptic nucleus for maintaining water balance suggests the possibility that other unique receptors participate to synthesize basic feeling tone in the hypothalamus Destruction of the caudal portion of the hypothalamus by Bard [4] and later by Bailey and Davis [5] led to the production of mutism and akinesia, particularly of faciovocal activity This inspired Nielsen and Thompson [6] to regard these cells about the upper aqueduct as the centers of conation and as the origin of drive to maintain all tissue optimum by infusing the organism with primal animation, feeling and crude psychic energy

Few neurological entities in man are encountered when basic feeling or perception of emotional tone is modified by focal anatomical lesions It is usually assumed that extraneous stimuli are not merged with cenesthetic consciousness until they reach the thalamus and, specifically, its primary receptive field, the ventral posterolateral nucleus Lesions in this nucleus in man are not uncommon because of thrombosis of the geniculothalamic artery, and they produce the well-known syndrome of Déjerine and Roussy with its familiar disruption of sensory thresholds

The ventral posterolateral nucleus of the human thalamus is something more than just another sensory synapse Therefore, lesions in this area offer an interesting study of emotional disruption on the subjective side which merit more investigation than they usually get The main difficulty is the patient's inability to express emotional experiences in terms of clear, discriminative language As every neurologist knows, in this thalamic syndrome, light touch when applied in a dragging manner along the skin, produces an angry, permeating disagreeable sensation invoking an emotional response which ordinarily belongs to a pain stimulus Paradoxically, a pain or deep pressure stimulus may actually produce a feeling of relative relief or pleasure The peculiar, qualitative experiences which perfuse the entire half of the body when a non-noxious stimulus is applied, are called hyperpathias

Ten patients studied by me have recorded their inward feelings about hyperpathia as an "inward frenzy affecting one half of the body," as an "angry feeling without good cause," as an absurd "hemiemotionalism" and as a "hemiagitation bordering on a shrieking hysteria " In all 10 patients, this hyperpathia was mild or totally absent in the trigeminal distribution

The agitated hemiemotionalism in two patients with the thalamic syndrome could be provoked by special sensory stimuli, such as the auditory nerve In one patient, the distress was precipitated by the sound of his wife's vacuum cleaner and in another, by the grating sound of silverware on this plate, which required the use of wooden eating utensils

Perhaps the best elucidation of the distorted effect in the Déjerine-Roussy syndrome was offered by a most intelligent and cooperative professional man of 58 years a judge in a district federal court, who had excellent command of English and was unique in his ability to express the finer nuances of inward feelings The hypesthesia-hyperesthesia paradox involved his right side He had the typical, uncomfortable reaction to light touch, which induced an "inarticulate frenzy" on the same side When he was angered by any disconcerting psychogenic situation, this permeating, indescribable wave of distress spread from the neck to the toes of the right foot, "as if a house current of 110 volts were passed through the same side of the body " On the other hand, whenever he was taken up with some deeply sentimental and pleasant feeling, such as that provoked by the surprise visit of a favorite married daughter from California, he became acutely aware of the pleasurable emotions of the occasion as a half-body experience involving only the intact left side He recalled such a hemiemotionalism on the pleasurable side at least a half-dozen times

Another patient in this series amused the junior physicians with his persistent claim that in his erotic pursuits he could clearly sense the feeling of passion in only the intact half of his body, an anatomical cleavage which even included the external genitals This was regarded as a bit of imaginative whimsy on the part of the patient until, on further inquiry, three other male subjects admitted to the same peculiar hemieroticism and two patients after right hemispherectomy reported the same "dissociation of pleasure "

These unique examples of what can be called a hemiemotionalism or hemipassion are found only in lesions of the ventral posterolateral nucleus in humans It is believed to be due to a localized release from diencephalic and cortical control of the thalamus From Spiegel's extensive thalamotomy experiments, we know one cannot say that there is a single thalamic center of emotions However, this nucleus does produce a distinct anatomical dissociation of feeling function and thereby furnishes one useful clue in the organic studies of emotional synthesis

AUTONOMIC PHASE OF EMOTIONS

Adhering to Reid's definition of what constitutes an emotion, the second phase deals with the concomitant discharges in the emotional experience which take place in the visceral nervous system This phase of emotional physiology lends itself to the easiest and most reliable objectivity Along with the excellent pioneer investigations of Pavlov and Cannon, the mass of data available today is largely due to the enthusiasms of psychomatic medicine and is too well known and too comprehensive to allow for any comment in this strictly neurological discourse

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[3] Verney E B Croonian Lecture The Antidiuretic Hormone and the Factors which Determine its Release Proc Roy Soc London s B 135:25 1947

[4] Bard P Emotion The Neuro-Humoral Basis of Emotional Reactions in Murchinson C A Handbook of General Experimental Psychology Worcester Mass Clark University Press 1934 pp 264-311

[5] Bailey P, and Davis, E W Effects of Lesions of the Periaqueductal Gray Matter in Cats and Monkeys Arch Neurol & Psychiat 53 325 (April) 1945

[6] Nielsen, J M, and Thompson G N The Engrammes of Psychiatry Springfield Ill Charles C Thomas Publisher 1947

MOTOR PHASE OF EMOTIONS

Far more intriguing are the recent advances in the study of the motor, or expressive, phases of the emotions It is an interesting commentary that after Charles Bell[7] described amimia in 1806, after Duchenne's[8] electrical stimulations of facial expression, in 1862, and after Darwin[9] wrote his "Expression of the Emotions in Man and Animals" in 1872, there was a notable lack of interest in pursuing the study of the motor side of the emotions This was in spite of the observations made long before by Parkinson,[10] who established a clinical entity noted for its defect in spontaneous emotional animation Because clinicopathologic correlations in almost all types of parkinsonian rigidity are obscured by the diffuse nature of the cerebral lesions, no one could venture an exact opinion on the role of the basal ganglions in emotional expression, particularly when their direct stimulation showed these nuclei to be relatively inert

In the modern neurophysiological concept, the function of basal nuclei in emotional expression is not denied They are not primal centers but play an elaborating role in the so-called reverberation circuits These are devices which allow an interplay of suppressor and facilitative mechanisms which involve the thalamus, the sensory cortex, the suppressor area 4s, the premotor and motor areas as well as the striatum and pallidum

Another complex of structures which modify and elaborate emotional display is that proposed by Papez[11] who introduced an elaborate integration by way of the gyrus cinguli and much of what is called the rhinencephalon, all these mechanisms acting on the hypothalamus

All these rather convincing theories about the emotions are difficult for the clinical neurologist to apply because of the elaborate and widely dispersed neural mechanisms involved The latter somehow fail to qualify as fundamental centers of emotional expression, as primary structures for the discharge of those spontaneous, massive, postural and facial activities which are considered direct expressions of pure feeling

Neurology has been looking for something like a "final common pathway" for emotional expression It is a safe premise that such a mechanism is phylogenically old and will be found in a very old motor system in the brain Bell sensed it when he drew attention to the facial muscles as the best expressers of human feeling and that the stimulus for facial expression arises from a primitive portion of the motor system He first drew attention to the simple fact that patients can have a voluntary weakness of one angle of the mouth, but in spontaneous laughter or grimace the facial activity is complete He also mentioned that the opposite condition can occur and therefore concluded that voluntary control and emotional control of the face arrive from different motor centers Even in the preexperimental and purely empiric days of Darwin, the latter recognized that the emotions are discharged through phasic postural states of the body, through respiratory activation, and, in human beings, essentially through plastic activities of facial muscles

The motor side of the emotions, then, is primarily a complicated synthesis of posture, respiration and facial activation No structures above the hypothalamus when stimulated in the experimental animal have duplicated a complete motor emotional ensemble Not until the stereotaxic apparatus began to probe more accurately into the reticular formation of the brain stem were there evidences of something like primary emotional expression or absence thereof This reticular formation occupies the tegmentum of midbrain, pons and medulla and has its caudal portion in the posterior hypothalamus

In brief, this reticular substance is functionally divided into a repressive and a facilitative system It is this latter structure, now often referred to as a reticular activating system, which appears to promote a quick, natural, fluidlike expression of feeling with such movements as grimacing, licking, grasping, turning, progression patterns of the arms, easy and almost reflexive faciovocal activities, all of which Darwin found to be expressions of emotional tone

Recently, Ward, McCulloch and Magoun[12] finally produced the completely deemotionalized animal when they made electrolytic lesions at the base of the tegmentum, extending from the midbrain to the lower pontine level Along with this synthetic parkinsonian rigidity, they also reproduced the static tremor typical of the disease

In human beings, the neurologist may occasionally encounter a lesion restricted to the brain-stem reticulum which allows fairly accurate clinicopathologic correlations Such a lesion is usually the spongioblastoma of the reticular substance of the pons or medulla, which has not extended into tectal or ventral structures I studied five such patients clinically Amimia was found to be most severe in these patients and was the very first localizing symptom in two of them Parkinsonian symptoms, such as rigidity, tremor and asynkinesia appeared in two, one an adult of 42 and another a girl of 11 years Both were thought to have von Economo's encephalitis, although I should have known better than to expect an encephalitic parkinsonism in a child of 11 Naturally, all these patients were eventually overwhelmed by a bulbar palsy which utterly obscured the akinesia, emotional impoverishment, and postural rigidities which theoretically are caused by a destruction of the facilitative tracts in the brain-stem reticulum

It is doubtful whether all the specific emotional patterns are fabricated in this "semifinal" common path even if we include the most caudal portions of the reticular formation and the central gray substance in the posterior hypothalamus Stimulation of the latter structure in cats produces the rage reaction, but when the primate is subjected to the same test, the result is not the same We must concede that it requires more than reticular substance to compound and fabricate the emotions Consideration must be given then to the physiological and anatomical formulations of Papez, as well as to those engrams which involve the suppressor centers in the cortex and their connections with the basal nuclei, the thalamus, and hypothalamus, which are so expertly summarized in a paper by Lindsley, Schreiner and Magoun [13]

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[7] Bell C Anatomy and Philosophy of Expression, ed 1 New York Collins & Company 1806

[8] Duchenne G B A Mécanisme de la physionomie humaine ou Analyse électro-physiologique de l expression des passions 1882

[9] Darwin C The Expression of the Emotions in Man and Animals New York Appleton-Century-Crofts Company Inc. 1873

[10] Parkinson J An Essay on the Shaking Palsy London Sherwood Neely & Jones 1817

[11] Papez, J W A Proposed Mechanism of Emotion Arch Neurol & Psychiat. 38 725 (Oct.) 1937

[12] Ward A A Jr McCulloch W S and Magoun H W Production of an *Alternating Tremor at Rest in Monkeys* J Neurophysiol 11 317 1948

These sporadic samplings of both experimental and clinical study do not indicate that the neurologist is ready to submit a good organic engram for the human emotions But the data are more complete than most medical minds believe, and there is a distinct demand for a candid and careful listing of all the material now available The neurologist must do his part in establishing the emotions as part of a physical mechanism upon which the psychologist and psychiatrist can construct their own formulations

Even the psychologist,[14] who is usually wary of the biologist, in his most quasi-philosophical moods admits that "susceptibility to any kind of emotional arousal is in a significant way a function of the sturdiness of the (anatomical) structures that direct and regulate the life of the individual No psychology of emotion is complete without an account of these structures "

The anatomy and physiology of the emotions must not remain in a crepuscular zone They will be fully understood only after we have developed methods of describing and plotting the essential structures and relationships both subjective and objective, of which the emotional mind is composed

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[13] Lindsley D B Schreiner L H and Magoun H W An Electromyographic Study of Spasticity J Neurophysiol 12 197 1949

[14] MacLeod R B Religious Perspectives of College Teaching in Experimental Psychology New Haven Edward W Hazen Foundation 1951

ARE YOU AN OTOLARYNGOLOGIST?

CHAIRMAN'S ADDRESS

James Milton Robb, M D , Detroit

By this simple direct question is meant are you a good practitioner of laryngology, otology and rhinology? This question really does not apply to and probably will have little practical interest for the superspecialists, those men who have perfected special techniques in one or two phases of this work and have limited their practices thereto This paper is primarily intended to call to the attention of the young man about to choose his life work the importance of the specialty, its scope, the opportunities it affords, and the pleasure of its practice and to offer a challenge to the man already traveling this high road

These superspecialists are in truth the research men in medicine and surgery of the nose, throat, and ear What a blessing to us! They clarify our minds as to the proper method of attack in these areas We could not do without them, for not only do they serve for reference but they also act as spurs and stimuli to the general practitioners of otolaryngology

The broad field is our job, broad not in the physical sense but in the complexities of this small but vital area And it is a much more responsible job than is often thought A thorough knowledge of the embryology, physiology, anatomy, and pathology of the nose, throat, and ear as well as of the face, mouth, and neck is required, for rightly the otolaryngologist should take care of the cysts, fistulas, and tumors of teratological origin in this field

Otolaryngology is a specialty in its own right, an important one and should not be considered a part of any other Sometimes a practitioner may find it necessary to combine the practice of otolaryngology and ophthalmology because of the practicability of this service to the smaller communities We all know this is not ideal, but it must be done And it can not be emphasized too strongly that in these cases adequate training in each specialty should be taken Neither should be sacrificed to the advantage of the other Whether you have chosen ophthalmology or otolaryngology or a combination of the two the national leaders in these fields have long recognized the value of intensive training beyond the walls of colleges and universities Home-study courses have been available for some time, and the annual classes offered by the American Academy of Ophthalmology and Otolaryngology afford the opportunity of intensive study—refresher courses that not only educate but stimulate It is impossible for any one to keep clearly in his mind the embrylogic and anatomic relationships of this area unless he is constantly thinking, studying, scanning

So small the area! So vast the field! Through this gateway, the nose and mouth, enter all types of infections whose foci may interfere with normal health and function in distant parts of the body And, conversely, the membrane of the nose affords barometric readings of the storms in the general system, for upon it are recorded the results of biochemical and autonomic nervous-system changes Thus the otolaryngologist must practice medicine, surgery, or a combination of the two

I flatter myself that I am an otolaryngologist and have been that for more than 40 years in an urban center in the Middle West A continuing practice from this laboratory, with more than one generation of human beings as the object of my efforts, I believe has proven the efficacy of these findings concerning the field In the following part of the paper I will discuss a few of the more important practices of otolaryngology

The tonsil has been the most persistent target of both lay and professional writing Whether to operate? When to operate? How to operate? And by whom? A good tonsil, like any other good organ, should be left alone A diseased one should be completely removed Tonsillectomy is not a simple procedure Its performance requires the consummate skill of a man well trained in otolaryngology because only a complete removal of the diseased tonsil, leaving an absolutely clean throat, produces the desired results The number of secondary operations attest to this

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Read before the Section on Laryngology Otology and Rhinology at the One Hundredth Annual Session of the American Medical Association Atlantic City June 14 1951

Closely associated with tonsillectomy is removal of the adenoids Adenoidectomy, usually considered a very simple procedure, is probably the most poorly done operative effort in all surgery because the area cannot be readily seen Infectious processes may have existed for years in this spongy lymphoid tissue, with a production of sinusitis, recurrent sore throats, and a surprising amount of toxemia In addition to good anesthesia, good light, good assistants, and good suction, instruments with which to elevate the palate and thoroughly remove the lymphoid tissue are required We should never underestimate the possibility of infection in the nasopharynx and its results It would be a good thing if each one in otolaryngology had to have his nose operated upon early in his career, to find out how sensitive the structures of the nose really are

A well-done submucous resection is one of the most satisfying operations because of the relief it gives the patient, for a nose blocked day and night is an extremely uncomfortable condition When deformity is present, in addition to the submucous resection, plastic procedures, not only to correct the deformity but also to improve the appearance and function of the nose, are included

Cases of chronic sinusitis, with or without polypoid change, have stimulated a great deal of study, to the end that conservative procedures have been sufficient to clear up many of these conditions However, when no good results have been obtained, we should never fail to resort to radical surgery This has been my routine practice, but my conviction was made indisputable by my own personal experience After a year at least of conservative effort, a right Caldwell-Luc operation with an exenteration of the right ethmoid and sphenoid gave complete results

There has been a tendency of late to treat the passing of endotracheal tubes, bronchoscopes, and esophagoscopes as simple, requiring little training and little care The otolaryngologist must be ever alert to the dangers of this practice There is no place in which good training and exacting care are more vital than in peroral endoscopy It is still a straight and rigid tube passed along soft tissues

The larger cysts and tumors of the mouth can be handled much more easily with intratracheal anesthesia To those who are more accustomed to working under these conditions rightfully belongs this surgery, especially of the large cysts arising from the cervical sinus Even under the most advantageous circumstances, these cysts are not easy to excise

The removal of teratological developments in the face, mouth, and neck are most interesting and frequently difficult surgical procedures These teratological developments have never elicited the proper interest of otolaryngologists in spite of the fact that their origin is in the throat, whence they travel far afield into the structures of the neck The removal of a thyroglossal cyst and tract demand careful dissection, especially if there are accessory tracts Experience has shown that removal of the central section of the hyoid bone at the time of the operation is essential Lateral cervical fistulas are best removed by the insertion of a filiform bougie and the use of stepladder incisions The fistula must be completely excised from its exit in the neck to the pharynx, just back of the tonsil The facial nerve has always been a prime interest of the otolaryngologist, therefore, the outlining of its distal branches with the removal of parotid tumors should be within his scope

With our aging population the care of the malignancies of the nose, throat, and larynx and their extensions into the surrounding tissues present another field for serious effort No one can tell as he attacks a malignant process in these tissues how far it has extended, and this extension, of course, must be removed along with the primary source of involvement

In spite of the use of chemotherapy and antibiotics, we still encounter some of the serious complications of the middle ear and mastoid diseases, such as brain abscess, acute thrombophlebitis of the lateral sinus, and labyrinthitis These conditions may become very serious because they are seldom expected We must never close our minds to their possibility!

There is no place in the body where reactions in the general system are shown better than in the membranes of the nose and throat. These reactions are evidenced by changes in the color, moisture, secretion, and sponginess of the membrane What the trigger mechanism is that produces these reactions is at times difficult to determine, but it must be sought by the physician in attendance A blocked nose is not always due to a deviated septum A wide open nose is not always due to the atrophic change associated with chronic infection The dry throat and hoarse voice are not always due to smoking or tumor of the vocal cord Nor is the sense of a lump in the throat always due to the thyroid adenoma, branchiogenic cyst, or cancer Medical otolaryngology has a very wide field into which enter allergic response, dietary deficiencies, blood dyscrasias, endocrine dysfunction, sympathetic and parasympathetic imbalance, and many other entirely medical problems It is true that we need the help of the internist, pediatrician, allergist, and specialists in other divisions of medicine, but no one can visualize the condition of the nose and throat tissue as well as we who are constantly surveying the area

In conclusion, this specialty is an important one in its own right Because of the complexities of the area covered by it, constant re-education in the embryology, physiology, anatomy, and pathology of the nose, throat, and ear as well as of the face, mouth, and neck is essential to good practice Otolaryngology offers a wide range for the surgeon, a broad field for those more interested in the medical side, and unlimited horizons for the general practitioner of otolaryngology—for our horizon is but the limit of our vision

1553 Woodward Ave

Therapy of Ménière's Disease.—A number of operations have been developed for alleviating the intractable vertigo of Ménière's disease in those patients in whom medical therapy either has failed or the institution of such a regimen was impractical The primary purpose of these procedures has been the prevention of the acute episodes of vertigo The available data tend to indicate that this is most consistently accomplished by resection of the eighth nerve and avulsion or electrocoagulation of the membranous horizontal semicircular canal.—Frank D Lathrop, M D, Surgery of Ménière's Disease, *The Surgical Clinics of North America,* June 1951

CLINICAL SIGNIFICANCE OF NIPPLE DISCHARGE

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and
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The significance of nipple discharge lies in the insignificance with which it is regarded Cancer detection requires an accurate appraisal and interpretation of the importance of nipple discharge in diseases of the breast

This review constitutes a statistical survey of 114 patients with nipple discharge who were operated on in the Johns Hopkins Hospital during the 10-yr period 1940-50 All patients were hospitalized, and the validity of the diagnoses was based upon pathologic evidence obtained in the operating room by the scalpel rather than by the random probing of an aspirating trocar The difficulties of our experience at the breast clinic have cautioned us against the peril of putting too much faith in the thin ice of diagnoses based on clinical impressions alone Thus, we have intentionally excluded from this study all patients who were classified as outpatients and who have never had their clinical diagnoses verified by microscopic examination Riddell[1] in his recent Hunterian lecture on carcinoma of the breast, stated that it is "wise to accept with humility that, however experienced we are, we cannot differentiate with certainty on clinical grounds alone between nonmalignant and early malignant" breast lesions

INCIDENCE

During the 10-yr period between 1940 and 1950 there were a total of 2,195 patients hospitalized at the Johns Hopkins Hospital for a great variety of diseases of the breast In the classified index of diagnoses these patients were found to be grouped in 48 different categories and subcategories of breast lesions in the files of the hospital record room Thus, from among 2,195 patients with breast disease there were 114 patients with nipple discharge—an incidence of 5 2% Included in this group were (1) patients whose primary complaint was discharge from the nipple and (2) patients whose nipple discharge was secondary to a menacing mammary disease or perhaps incidental to hospitalization for a primary disease unrelated to the breast but subsequently necessitating breast surgery At the time of initial examination, 74% of the patients had clinical evidence of breast disease determined by physical examination However, 26% of the patients had no physical sign other than discharge from the nipple Thus, no evidence of breast tumor could be detected in about one-fourth of the cases The duration of discharge in all patients ranged widely from three days to seven years

In a report by Hinchey[2] of all breast cases seen in the tumor clinics of the Massachusetts General Hospital and the Boston dispensary, 8 3% of 1 051 patients had nipple discharge Many of these were outpatients, and the diagnosis could be confirmed by microscopic examination in only 78% In a review of 2,269 cases of mammary lesions treated in the department of surgery at the State University of Iowa hospitals, Donnelly[3] found 9 6% to have discharge from the nipple There were in this series of patients 217 females and two males At the Johns Hopkins Hospital there was an almost identical ratio of 113 females and one male with nipple discharge The ratio of white to Negro patients was 64 to 50, but this may reflect merely the hospital bed capacity for the segregation of the races Also, it is well to consider that Baltimore has a white to Negro population ratio of about four to one

PHYSIOLOGY AND PATHOLOGY OF BENIGN BREAST DISEASE

Benign breast disease is a common but perplexing condition the cause of which is obscure, the pathology puzzling and the treatment empiric and unsatisfactory The medical literature is replete with many excellent papers, notably by Nelson,[4] Nathanson,[5] Atkins,[6] Taylor, and Haagensen,[8] which tend to interpret the pathology of benign breast disease on the basis of an abnormal physiology of the breast Since the mammary gland is often considered physiologically as a satellite of the female reproductive system, it would be expected, quite naturally, to respond to hormonal stimulation by the anterior pituitary, adrenals and gonads The hormonal relationship of the posterior pituitary, pancreas and thyroid to the breast is vague, but not entirely unlikely Nervous stimuli are also rather indefinitely involved in the uncertainties of breast physiology Actual morphologic changes in the breast, however, are known to be quite closely related to various phases of the reproductive cycle

It has been rather well established that the cyclic changes that normally occur within the breast can be correlated with the degree of estrogen and progesterone activity Mammary gland proliferation and branching of the ducts with little or no development of the alveolar system is known to be the result of estrogenic or ovarian follicular hormone stimulation Progesterone, in combination with estrogens, but not alone, induces extensive development of the breast to the compound acinar or alveolar stage Whether these changes are due solely to ovarian activity alone is still speculative Also, there is every reason to believe that variation in physiologic response may be in part due to the complex changes that

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From the Breast Clinic Division of the Tumor Clinic Department of Surgery Johns Hopkins Hospital

[1] Riddell V Early Diagnosis and Treatment of Carcinoma of the Breast Brit M J 2:635 1948

[2] Hinchey P R. Nipple Discharge Clinicopathologic Study Ann Surg 113:341 1941

[3] Donnelly B A Nipple Discharge Ann Surg 131:342 1950

[4] Nelson, W O Endocrine Control of the Mammary Gland Physiol Rev 16 488 1936

[5] Nathanson I T Present Concepts of Benign Breast Disease New England J Med 235 516 and 548 1946

[6] Atkins H J B Chronic Mastitis Lancet 1 707 1938

[7] Taylor H C Jr Relation of Chronic Mastitis to Certain Hormones of the Ovary and Pituitary and to Coincident Gynecological Lesions Surg Gynec & Obst 62 129 and 562 1936

[8] Haagensen C. D The Surgical Physiology of the Breast S Clin North America 29 1659 1949

consist of epithelial proliferation, cyclic growth and regressive phases, vascular and secretory alterations, and changes in the water balance of the body due to endocrine influences Changes within the connective tissue or epithelial elements of the breast depend on the rise and fall in the number of hormones that originate principally in the gonads and to a lesser degree in the pituitary and adrenals This response to growth stimuli or abnormal involution following a normal response is the basis for understanding the pathologic changes of benign breast disease Yet one must bear in mind that there is a wide gradation of responsiveness to hormones that is present in both animals and man This is true not only of more than one breast, but also of different portions of the same breast Since the breast is not a static organ but rather a dynamic one dependent upon the action of hormones, Womack[9] has suggested that time is the fourth dimension to be considered in breast pathology—the reaction of certain target cells to certain stimuli acting over a certain period of time

For the purpose of this paper, benign breast disease will be divided arbitrarily into three major categories, namely, (1) chronic cystic mastitis, (2) fibroadenoma and (3) papilloma Although the term chronic cystic mastitis is a medical misnomer and catchall for a variety of painful and/or nodular lesions of the breast not due to neoplasia, inflammation, or necrosis, yet, in the matter of terminology "the chains of habit are generally too weak to be felt till they are too strong to be broken" The opinion of the profession is biased in favor of the term chronic cystic mastitis because it is accepted by all, advocated by authority, and recommended by custom The artillery of synonyms coined to describe the histological changes associated with chronic cystic mastitis are legion Fibrocystic disease, mastopathy, nodular hyperplasia, cyclomastopathy, Reclus' disease, Bloodgood's blue-domed cysts, Schimmelbusch's disease, mazoplasia, cystipherous epithelial hyperplasia, chronic mastitis, mammary dysplasia, mastodynia, adenosis, adenocystic disease and many other complex and hybrid names are often repeated in the literature, thus adding chronicity to the confusion

TABLE 1—*Incidence of Various Types of Nipple Discharge*

	Hinchey		Donnelly		Present Series	
Type of Discharge	No of Cases	%	No of Cases	%	No of Cases	%
Serosanguineous	36	54	121	55	54	47 4
Serous	16	22	47	21	33	28 9
Whitish (milky)	5	7	18	8	12	9 9
Watery	2	3			8	7 0
Miscellaneous	8	13	38	17.3	7	6 8

Fibroadenomas are among the most frequent tumors that occur in young women, and are particularly common in the Negro race They are characteristically firm and solid, may be round or lobulated, most often are freely movable and not attached to the skin or surrounding tissue and are infrequently the source of nipple discharge Microscopically, fibroadenomas reveal an increase in connective tissue stroma with a hypertrophy of ducts and ductal epithelium These tumors have been known to change in size and appearance during various phases of the menstrual cycle and most noticeably during pregnancy

Chronic cystic mastitis frequently occurs in women of middle life and is often associated with premenstrual breast pain and engorgement, tenderness to palpation, nodularity that may be deceptively firm, and, less frequently, discharge from the nipple There is often a proliferation and desquamation of the ductal epithelium with dilatation and the formation of cysts The interstitial connective tissue is increased, and there is noted an infiltration of small round cells Many variations and gradations of this pathologic process exist

Particular mention should be made of a type of chronic cystic mastitis specifically characterized by discharge from the nipple The secretion may be of any type and of any degree of viscosity Dilatation of the ducts adjacent to the nipple or beneath the areola can usually be palpated by careful examination Nathanson[5] suggests that this syndrome is probably due to an ovarian dysfunction resulting in incomplete involution caused by an anovulatory menstrual cycle

Papillomas are usually associated with varying degrees of epithelial hyperplasia within the duct system of the breast Duct cells proliferating in complex branching patterns are supported by a thin connective tissue and highly vascular core The location of these tumors and their fragile growth structure make them particularly vulnerable to damage and resulting hemorrhage The more marked papillomas may occur within a cyst, with or without a definite stalk deep within a duct in a breast lobule, or as a gross and readily felt papillary lesion in the subareolar region These palpable nodules are frequently multiple and may be detected by transillumination, careful manual examination and pressure tests, and by mammography Segmental stretching and point pressure around the areola will often result in exact localization of the source of serous or serosanguineous discharge from a papilloma Microscopic papillomas are frequently found universally distributed throughout the breast in the presence of gross disease Donnelly[3] notes that even with incomplete microscopic studies (the task of serial sectioning of breasts would be appalling) at least 20% of papillomas were multiple in character Our experience corroborates the fact that invariably if papillomas are carefully sought after they will be found to be multiple and extensive

TYPE OF NIPPLE DISCHARGE

The wide range of abnormal physiology of the breast gives scope for a great variability in the classification of nipple discharge It is doubtful if any two hospitals, any two surgeons, or any two series of cases could be precisely proportional Inasmuch as these proportions depend upon so many factors, it is indeed surprising that the several series reported are so closely comparable (Table 1)

The spectrum of secretion from the nipple can be of almost any color and description Separate ducts within the same nipple and at the very same time may secrete diverse types of discharge During the course of close clinical observation it is not uncommon to find a change in the character or color of the initial discharge from the nipple These shades of difference, however, may be representative of quite distinct and unrelated diseases of the breast To determine whether there was any constancy or correlation between the type of nipple discharge and a specific lesion of the breast, our figures were analyzed in Table 2 Except perhaps for papilloma there would appear to be only a haphazard relationship between the type of nipple discharge encountered and the underlying mastopathy All cases of papilloma with nipple discharge showed the presence of either a serosanguineous or a serous secretion Cancer and benign breast disease (a lumping category mentioned previously) are quite similar in the types of nipple discharge noted Thus, it would appear clearly evident that no one type of nipple discharge is specific for a particular breast lesion, and conversely, both cancer and benign breast disease can give rise to diverse types of nipple discharge Therefore, these alien signs are disappointing from the point of view of differential diagnosis

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[9] Womack, N A Benign Lesions of the Breast J Kansas M Soc (Cancer Suppl) 50 64 1949

Since the Papanicolaou smear technique has become a part of the laboratory routine of most hospitals, there have been several studies indicating its usefulness as applied to breast secretions Material for examination is usually obtained either by direct smearing of secretions or by trocar aspiration of a suspicious area in the breast From our very limited experience with this technique its value as a diagnostic aid will require further evidence

Gray and Wood [10] noted, in their study of both benign and malignant papilloma of the breast, that a discharge from the nipple occurred in 77% of their 227 cases In all of their papilloma cases, as in all of our cases, the secretion was serous or serosanguineous In discussing the significance of a serohemorrhagic or hemorrhagic discharge from the nipple, Adair,[11] Judd,[12] and Miller and Lewis [13] found about the same proportion of benign and malignant lesions responsible for the abnormal discharge In studying a group of cases of benign breast disease (fibrocystic disease and papilloma) Mingazzini [14] found that a sanguineous discharge was the first sign of disease in a majority of cases In one case, discharge from the nipple preceded the development of a tumor by 10 yr and in another case, by six years

Among the types of nipple discharge found less commonly one notes the occasional occurrence of a whitish or milky secretion This white discharge from the nipple may be milk, pus or carcinoma cells A cytological examination of the secretion should insure a reliable and ready differentiation Cheatle and Cutler [15] reported one example of a thick white discharge that consisted of carcinoma cells from a subareolar duct cancer

Among the miscellaneous types of nipple discharge, one may find a thick greenish discharge from the nipple This is usually the result of retained secretions following lactation, which stagnate within dilated ducts As suggested by Geschickter [16] this inspissated or grumous discharge may become contaminated with Bacillus pyocyaneous, an infection accounting for its garish green color Others believe that it may be due to disintegrating blood pigment In an interesting study by Stajano,[1] of Montevideo many different types of abnormal secretions of the breast were discussed He called particular attention to a relatively infrequent type of gray or black secretion that is of practical importance because it may closely simulate and be mistaken for a sanguineous nipple secretion Many phagocytic cells of the reticuloendothelial system filled with particles of melanin were present in the secretion of the patients he observed

ETIOLOGY OF NIPPLE DISCHARGE

The careful observations of many investigators have shown that most cases of nipple discharge are caused by (1) chronic cystic mastitis and fibroadenoma, (2) papilloma, and (3) cancer Donnelly [3] notes that chronic mastitis was responsible for 25% (55 cases) of nipple discharge in his series, intraductal papilloma was responsible for 30% (66 cases), and cancer, including Paget's disease, was responsible for the remaining 45% (98 cases) Hinchey [2] found that proliferative cystic disease and hormonal dysfunction caused 54% (36 cases), intraductal papilloma 10 5% (7 cases), and cancer, including Paget's disease, 36% (24 cases) of discharge from the nipple In limiting this study to the bleeding nipple alone Campbell [18] recorded the following sources of discharge cystic disease 24% (13 cases), papillomas 36% (19 cases), and cancer 38% (21 cases) Arthur Purdy Stout,[19] a surgical pathologist particularly skilled in the pathology and nosology of breast lesions, finds the foregoing facts and figures refutable He is "astonished to find that there are still physicians who believe that in more than half of the women showing this sign (bleeding from the nipple), the cause is cancer This is, of course, entirely contrary to the facts "

TABLE 2 —*Relation of Breast Disease to Type of Discharge from the Nipple*

	No of Cases			
Type of Discharge	Chronic Cystic Mastitis and Fibroadenoma	Papilloma	Cancer	Total
Serosanguineous	21	25	8	54
Serous	24	2	7	33
Whitish (milky)	11	0	1	12
Watery	8	0	0	8
Miscellaneous	6	0	1	7

Nonetheless, from an analysis of the data generally available, benign breast lesions accounted for about

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[10] Gray H K and Wood G A The Significance of Mammary Discharge in Cases of Papilloma of the Breast Clinical and Pathologic Study Arch Surg. **42** 203 (Feb) 1941

[11] Adair F E Sanguineous Discharge from the Nipple and Its Significance and Relation to Cancer of the Breast Ann. Surg **91** 197 1913

[12] Judd E S Papilloma of the Breast, Journal Lancet **37** 141 1917

[13] Miller E M and Lewis D Significance of a Serohemorrhagic or Hemorrhagic Discharge from the Nipple J A M A **81** 1651 (Nov 17) 1923

[14] Mingazzini I Seilla etiologia e sul valore clinico dello scolo di sangue del capezzolo della mammella Arch ital di chir **50** 165 1939

[15] Cheatle G L. and Cutler M Tumours of the Breast Their Pathology Symptoms Diagnosis and Treatment Philadelphia J B Lippincott Company 1931

[16] Geschickter C F Diseases of the Breast, Philadelphia, J B Lippincott Company 1948

[17] Stajano C. La seudo-mama sangrante Las secreciones pigmentarias pardas o verdes del seno simulando la secreción hemática Criterio diagnóstica pronóstica y terapéutico An Fac de med de Montevideo **26** 243 1941

[18] Campbell O J The Bleeding Nipple Surgery **19** 40 1946

[19] Stout A T The Role of Pathology in Lesions of the Breast, South M J **43** 208 1950

60% of the cases of nipple discharge, and malignant lesions, about 40% In the present group of Johns Hopkins Hospital cases (Table 3) benign lesions of the breast were the source of almost 80% of the cases of nipple discharge, whereas malignant lesions were the source of only 20% of these cases It is not an altogether surprising measure of merit to find a high index of suspicion associated with a low incidence of cancer among the patients with breast disease who reach the operating room For no case is as early as it seems and "We must grow more and more accustomed to suspecting malignant disease on less and less clinical evidence "[1]

Careful examination of Table 3 confirms the impression that many diseases of the breast may be the source of secretion from the nipple In addition to the causes listed in Table 3 Adair[11] noted that seven out of 10 patients with plasma cell mastitis had a nipple discharge Specific and nonspecific ductal diseases are often associated with nipple discharge An endocrine factor has been suggested as the etiological basis for some cases, although most investigators have been unable to confirm this by means of the urinary hormone assays available at present The measurement of steroid biologic waste products in the urine is often a routine ritual responsible for one's bewildering oneself scientifically Perhaps the key to the problem of effective hormone estimation should be sought in efficient methods of blood level determinations rather than in urinary assays Whether new and more precise yardsticks and blood tests will confirm this point of view remains to be seen In our group of 114 cases 7% (8 cases) gave quasi-clinical or laboratory evidence of hormone imbalance A whitish discharge was present in two, and a serous discharge was present in six, of these cases Gynecomastia in a young male was the source of a milky discharge in one of the above cases Trauma was associated with nipple discharge in only 4 4% (5 cases)

TABLE 3 —*Lesions of the Breast Causing Nipple Discharge in 114 Patients*

	No of Patients	%
Benign breast disease		
Chronic cystic mastitis *	40	40 3
Chronic cystic mastitis with abscess and inflammation	6	5 3
Chronic cystic mastitis with galactocele	2	1 7
Fibroadenoma	11	9 7
Papilloma	27	23 7
Total	92	80 7
Malignant breast disease		
Carcinoma	13	11 2
Paget s disease	9	8 1
Total	22	19.3

* An all inclusive catchall for a variety of benign breast lesions associated with chronic cystic mastitis

TABLE 4 —*Surgical Treatment of 114 Patients with Discharge from the Nipple*

	No of Patients		
Lesion	Biopsy or Local Excision	Simple Mastectomy	Radical Mastectomy
Chronic cystic mastitis	32	20	2
Fibroadenoma	9	2	0
Papilloma	17	10	0
Paget s disease	1 *	4	4
Cancer	0	0	13

* This patient refused further treatment

TREATMENT

A review of the surgical press reveals a disconcerting lack of uniformity in the treatment of patients with discharge from the nipple Although the subject has prompted a free and diverse discussion in the contemporary as well as in the time-honored annals of medical literature, the significance and therapy of nipple discharge remains independently in keeping with the custom of each individual surgeon In the etiology and pathology of underlying breast disease, our clinical experience is long but our basic knowledge is short This serves variably as a beacon to some and a scarecrow to others It is unfortunate but true that observational pathology has been unable to pigeonhole all breast diseases into error-tight compartments of benign and malignant lesions Thus, the deliberation and decisions required in treatment of patients with nipple discharge are too often based on ill-defined and intangible clinical judgment

Bloodgood,[20] a renowned authority of great influence in the evaluation of diseases of the breast, was strongly prejudiced regarding the lack of significance of discharge from the nipple as a diagnostic sign From among his voluminous contributions one may quote the following

> Discharge from the nipple, like pain, is not an indication of a lesion of the breast for which operation is indicated There is no evidence that these lesions are precancerous, and the prevailing view that a woman with a discharge from the nipple should be protected from cancer by the removal of the breast is based on fear and not on fact

The conservative convictions of Campbell[18] indicate that "too much fear, even panic, has been exhibited toward the symptom of bloody discharge from the nipple " In accord with Campbell are Slaughter and Peterson[21] who believe that "the diagnosis of 'chronic cystic mastitis,' the presence of a bleeding nipple, or of intraductal papillomas without cellular atypism, do not indicate a prophylactic simple amputation, especially in young women " In a small series of patients with bleeding from the nipple but without a palpable tumor, Saltzstein and Pollack were not impressed by the potentially malignant nature of the condition Local excision in preference to "prophylactic" simple mastectomy was performed in six of the seven patients operated on Follow-up studies, however, are not recorded Geschickter,[10] a disciple of Bloodgood, reviews the pros and cons of nipple discharge as a sign of mammary lesions and concludes "proper investigation of the symptom is of the utmost importance " Gray and Wood[10] of the Mayo Clinic present the results of their clinical and pathologic study and "emphasize particularly the fact that discharge from the nipple, of any nature whatsoever, was found to be of great significance " To those who seek comfort in hope rather than in experience Gray and Wood offer the warning "that in 48% of our series of patients with malignant papillomas no tumor was demonstrable No tumors were palpable in 60% of all patients with malignant papillomas who had experienced discharge from the nipple " In general, Donnelly [3] favored more active surgical treatment for patients with nipple discharge

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[20] Bloodgood J C Benign Lesions of Female Breast for Which Operation Is Not Indicated J A M A. 78:859 (March 25) 1922.

[21] Slaughter D P and Peterson, L. W Indications for Simple Mastectomy Surg Gynec & Obst 85 456 1947

> Of the 219 patients treated at this hospital, 36 or 17 per cent did not have a palpable mass when examined All but one of these patients were operated upon, and the type of lesions found on histologic examination are of definite interest, in that thirty of the lesions showed definite evidence of hyperplasia Five patients had malignant lesions Six patients had lesions showing definite precancerous change

In the present series of 114 patients with nipple discharge Table 4 indicates that there was a variable standard of surgical treatment Most patients who were considered to have chronic cystic mastitis on the basis of frozen section were treated conservatively by a simple local excision When the lesion was widespread with diffuse nodularity or when there were marked hyperplastic changes, with or without the presence of a distinct tumor, simple mastectomy was the treatment of choice In two patients radical mastectomy was performed because the frozen section was reported to be carcinomatous, permanent sections failed to confirm this diagnosis Most patients with fibroadenoma were treated by local excision The treatment of papillomas was distinctive and individualized for each particular patient Whenever the histological changes were multiple and showed evidence of diffuse hyperplasia, simple mastectomy was favored in preference to local surgery

Paget's disease is a breast cancer arising in the epidermoid structures of the nipple and areola Although radical mastectomy is the treatment of choice, it was performed in only four out of nine patients One patient steadfastly refused to have any type of operative procedure beyond a local excision All other patients with breast cancer were treated by radical mastectomy

COMMENT

Nipple discharge is a sign of abnormality within the breast. Despite the difficulties of differential diagnosis presented by this sign, it can be assumed that secretion from the nipple betrays an early and unsuspected ductal or ductal-acinar disease If one could be certain that the relationship between benign breast disease and cancer is merely one of chance association rather than of elusive cause and effect, one could perhaps strongly defend endocrine therapy as the treatment of choice in restoring an abnormal breast physiology However, in the present series there were 22 cases of cancer of the breast with discharge from the nipple In 14 (64%) of these cases there was an associated history of benign breast disease There is an imperative need for a more careful analysis and evaluation of the relationship between benign breast disease and cancer The argument for this type of study lies in the weakness of our present methods of treatment.

No attempt at a long-term follow-up could be made in this short-range investigation However, in our study there were 63 patients with benign breast disease who were followed up for varying periods of time from one to 10 yr Regardless of the surgical procedure performed, breast cancer did not develop in any of these patients during their brief period of follow-up observation It would be of great importance to know whether these patients with manifest benign breast disease can look forward to a future free of danger

Of 104 patients with chronic cystic mastitis Donnelly [3] was able to obtain a postoperative follow-up study on 61 It is significant to note that those patients who subsequently had difficulty were those treated by local excision Among others with precancerous lesions six patients treated conservatively by means of simple excision alone ultimately developed cancer Every example of a recurrent malignancy in patients receiving inadequate surgery strengthens the argument for ample exploratory operations on the breast

SUMMARY AND CONCLUSIONS

This study constitutes a report on 114 patients with nipple discharge The incidence of this clinical sign in 2,195 patients with variegated breast disease was 5 2%

Benign breast disease, which includes chronic cystic mastitis, fibroadenoma and papilloma, was the source of about 80% of the cases of nipple discharge, whereas malignant breast disease, which includes Paget's disease was the source of 20% of the cases No sign of a palpable breast tumor could be found in 26% of either benign or malignant cases

The evidence indicates that no one type of nipple discharge is specific for a particular type of breast lesion, and conversely, cancer as well as benign breast disease can give rise to diverse types of nipple discharge However, in all cases of papilloma there was either a serous or a serosanguineous secretion from the nipple

Indications for surgical treatment are suggested The onus of responsibility rests heavily upon those who pursue the policy of watchful waiting

"We must grow more and more accustomed to suspecting malignant disease on less and less clinical evidence " [1] Thus, the virtue of nipple discharge as a diagnostic sign in foresight may be irretrievably lost in hindsight

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Polycystic Renal Disease.—The disease may be almost silent the symptoms causing the individual to seek medical aid being those of a medical nature and pointing to chronic uremic or hypertensive states The complaints may be of loss of weight, digestive disturbances, dizziness, headaches, malaise, or edema In some instances, an abdominal mass may have been noted by the person himself with no other difficulty being experienced More frequently, there will be complaints of pain, or a history of hematuria with or without pain, and recurrent febrile episodes with or without urinary symptoms The pain may be a dull, chronic, ill defined lumbar ache In many instances, there are superimposed recurrent attacks of sharp pain, typical of renal colic It has been theorized that the dull nagging pain may be due to traction on the renal pedicle by the enlarged heavy kidney The sudden sharp colicky pain may be due to sudden overdistention or rupture of the cysts by hemorrhage into the lumen If there is gross hematuria with passage of clots, these may cause typical ureteral colic The hematuria may be recurrent and painless or with colic as noted In some instances the hemorrhage may be so severe and persistent that surgical measures, even nephrectomy, may be required for its control —Frank N Buck R Carl Bunts, and Austin I Dodson Preservation of Renal Function in Polycystic Disease, *The Journal of Urology*, July 1951

The following case history, of a patient who was so ill that postoperative complications, or even death, might have been expected, illustrates our aggressive approach in the use of early ambulation

Illustrative Case.—A woman aged 53, had been ill for four days with midabdominal pain and cramps There had been no vomiting and no evacuation of the bowels On admission, since she was semicomatose and incoherent because of toxemia, it was impossible to obtain an adequate history from her Her temperature on admission was 101 F and the pulse rate was 140

Physical examination revealed no abnormalities except dehydration, abdominal distention, Grade III, and generalized tenderness, severer in the lower abdomen and extreme in the pelvis on bimanual vaginal examination The clinical impression was ruptured pelvic appendix, gangrenous intestines, or twisted pedicle of the ovary

After proper preparation, a lower midline incision revealed about 6 oz (180 gm) of free pus in the pelvis from a large rupture of a gangrenous appendix, this was not walled off The pus was aspirated and the appendix removed, and the abdomen was closed without a drain After the operation, the patient remained in a semicomatose state and had to be restrained for about 10 days Antibiotics were employed to the limit of tolerance, and fluids were administered parenterally The temperature and pulse varied between 101 and 103 F, and 110 and 150 respectively

On the day of operation, the patient walked with support, four times The next five days she walked a distance of about 200 ft (about 609 m) in the hall four times each day Though this patient was semicomatose and confused, she could walk considerable distances with the aid of two nurses who were well trained in the ambulatory procedure After the sixth day, weakness limited ambulation to about 50 ft (about 152 m) four times each day No food was tolerated until the 16th day, after which the walking distance was again increased The first bowel evacuation also occurred on the 16th day No enemas were given

By the 18th day the patient was so much improved that she was able to walk increasing distances alone She left the hospital completely recovered, on the 27th postoperative day

2 During the rest period in bed, leg exercises, as already described, are directed by means of an exercise chart, which is kept in constant view of the patient These exercises are performed every 10 or 15 min and it is the duty of the attending nurse to check frequently to see that they are being done properly We feel that these exercises are extremely important, particularly on the day of operation, as an adjuvant in the prevention of loose clot formation in the deep veins of the legs

3 During the first stages after operation, the patient is not permitted to sit in a chair The patient walks as much as possible and then returns to bed Until ambulation is well established and the patient is almost normally active, the patient is not allowed to sit in a chair, except for very short periods while eating a meal or while the bed is being changed In patients who have been subjected to extensive surgical procedures, this may require several days Even when the patient is allowed to sit in a chair, this should not be done for long periods The bed is kept flat at all times, back rests are not permitted, and patients are never allowed to have pillows placed under their knees We believe that the common practice of permitting patients to sit in a chair instead of walking during the early postoperative period accounts for some of the unfavorable reports

4 During the first period out of bed, the patient is required to cough while the nurse checks for the presence of palpable rales If rales are present, and the amount of mucus is large, vigorous voluntary coughing is required until the mucus is entirely expelled Excessive mucus and palpable rales can be and always should be eliminated by this means If there should be any threat of atelectasis, coughing exercises, in the standing position, are performed every two hours or oftener to obviate this danger The patient must be encouraged to cough vigorously, for the more effort expended by the patient, the greater the benefit

5 Only rarely is a narcotic given until after the patient has been out of bed to walk for the first time Sedatives are employed sparingly throughout the postoperative period In many cases they are not necessary at all Antibiotics are employed prophylactically when indicated

6 Electrolyte and water balance is carefully maintained during the preoperative and postoperative periods

7 Many patients are permitted a full diet immediately after operation, usually regulated by the patient's appetite Cathartics or enemas are not given postoperatively, they are considered dangerous in many instances The need for use of a bedpan is extremely rare, since patients walk to the bathroom from the beginning

8 There is no danger of wound disruption from ambulation if proper incisions and proper suture technique are used [22]

9 It is important that, before operation, patients should be ambulatory If, for some extraordinary reason, this is impossible, leg exercises in bed—vigorous flexion and extension of the toes, ankles, and knees at least four times every hour— should be substituted The regimen used after surgery is merely physiological management, and it is a mistake to call it rehabilitation If the patient's condition is such that he needs rehabilitation, it is done before operation excepting in the most acute emergency

When the preoperative and postoperative care of surgical patients is carried out with aggressive insistence in this manner, our experience furnishes convincing evidence that the hazards of prolonged disability or loss of life from embolic complications should be practically eliminated

THROMBOPHLEBITIS

In a series of 3,371 surgical cases, 90% of which were abdominal operations, and at least 1,631 represented so-called major surgery entailing greater hazard of embolic complication, there was no instance of pulmonary embolism either fatal or nonfatal (Table) The series does not include five cases of thrombophlebitis, the management of which deserves comment

Two of the cases of thrombophlebitis occurred early in the series and have been previously reported [illegible] Three additional instances have been observed during the past five years One of these patients was a man who left the hospital two days after a right herniorrhaphy, completely ambulatory On the fifth day after operation, some pain and slight swelling of the right leg appeared An elastic bandage was applied at the time and the patient remained ambulatory, returning to our office every few days for observation The condition improved steadily, and at the end of three weeks all pain and swelling had completely disappeared and the patient has remained entirely well The second patient was a woman with pelvic inflammatory disease with multiple chronic abscesses (frozen pelvis) She was ambulatory immediately after recovery from the anesthetic, and left the hospital on the fifth day after operation On the 18th postoperative day, there was a slight swelling of the left calf and some pain on walking A bandage was applied and normal ambulation was continued, with the patient coming to the office for observation at frequent intervals The pain disappeared in about 10 days, and after three months there was no residual swelling A woman who had an abdominoperineal resection had some swelling, with no significant pain, of the left leg five days after operation A bandage was applied and vigorous activity was continued When the patient came to the office 10 days later, the swelling of the leg had completely disappeared and she has had no further difficulty

*Total Cases Subjected to Early Ambulation to Dec 1 1950**

Major Procedures (prone to be complicated by postoperative thrombo-embolic disease)	
Gastrectomy	53
Gastro-enterostomy	14
Vagotomy (14 with gastro-enterostomy)	30
Duodenal diverticulectomy	4
Repair of perforated duodenal or gastric ulcer	16
Colon resections (anterior right colon obstructive and abdominoperineal)	46
Intestinal obstruction (correction of or resection)	41
Cholecystectomy (56 with common-duct exploration)	306
Choledochostomy (gallbladder previously removed)	15
Cholecystostomy (in the aged or in extremely ill patients)	11
Choledoduodenostomy	4
Splenectomy	5
Pancreatic cyst marsupialization	2
Kidney operations (nephrectomy lithotomy)	18
Prostatectomy	9
Radical mastectomy	37
Hysterectomy (with and without other surgery)	148
Other operations on the female pelvis	102
Herniorrhaphy (diaphragmatic hernia)	5
Herniorrhaphy (inguinal hernia 50 bilateral 17 strangulated)	356
Herniorrhaphy (incisional)	41
Appendectomy (for fulminating or gangrenous appendicitis or empyema)	312
Appendectomy (for ruptured appendix with spreading peritonitis)	35
Lumbar sympathectomy	1
	1 631
Less Hazardous Procedures (mainly abdominal surgery)	
Including exploratory laparotomy interval appendectomy for mildly acute appendicitis femoral herniorrhaphy umbilical herniorrhaphy colostomy perineal operations rectal operations pilonidal cyst thyroidectomy and all other cases remaining in the hospital over 30 hr	1 740
Total	3,371

* This includes some cases operated on by the junior authors on the surgical service of D J Leithauser at St Joseph s Mercy Hospital Detroit

Early ambulation cannot eliminate the possibility of phlebitis (inflammation), but will prevent the development of a large, loosely attached clot by greatly increasing the velocity of the blood stream Loose clots are thus washed away when they are incipient and still in the sludge state We have not in the 12 years during which early ambulation has been practiced, seen a single patient with fatal or nonfatal pulmonary embolism Venous ligation has never been used and no patient has ever received medical treatment with anticoagulants

COMMENT

The rationale of early ambulation and frequent leg exercise has previously been described,[23] and has also been emphasized by others It has been established that blood sludge, minute sticky clumps of red cells, are present after every surgical procedure [24] owing to the increased coagulability of the blood, and that the recumbent position results in mechanical stagnation of the venous flow [25] Hence it follows that vigorous flexion and extension of the toes, ankles and knees (in-bed exercises), and frequent walking in as brisk a manner as possible will quicken the circulation in the veins and keep the sticky sludge moving Thus, any loosely attached minute thrombus will be dislodged before the formation of a clot of sufficient size to cause fatal pulmonary embolism

In discussing early ambulation with many surgeons, in visiting university and private hospitals, and in reviewing published reports, it is evident that almost none of them approach the problem in the aggressive and standardized way that has proved efficacious in preventing thrombo-embolism in our patients Therefore, it seems to us that until those who still doubt the prophylactic value of early ambulation have applied it with this determined attitude and careful regimen in a large series of cases, this procedure, which is universally applicable in practically all surgical cases, should not be discredited by less favorable results reported by those who have used it half-heartedly and timidly, and without a completely standardized technique

A standardized regimen embracing an aggressive attitude toward early ambulation and specific leg exercises has solved the problem of embolic complications after surgery for us Those who profess to use early ambulation and yet continue to report cases of fatal pulmonary embolism caused by postoperative development of a thrombus in the deep veins of the leg should reexamine and reevaluate their technique of postoperative care

14540 E Warren

23 Leithauser [23] Leithauser D J Rational Principles of Early Ambulation J Internat. Coll Surgeons **12** 368 374 (May June) 1949 Surgery Ambulatory Postoperative Care in Medical Physics edited by Otto Glasser Chicago Year Book Publishers Inc 1950 vol 2 pp 1098 1100

24 Knisely M H Bloch E H Eliot, T S and Warner L. Sludged Blood Science **106** 431-440 (Nov 7) 1947

25 Baker E C Clinical and Roentgenographic Evaluation of Venography Based on Experience in 1 027 Cases, Am J Roentgenol **58** 603 616 (Nov) 1947

Zoonoses —There are over 80 known diseases which can be transmitted to man by vertebrate animals One need only cite tuberculosis, brucellosis, rabies, Q fever, and anthrax to give an idea of the importance of some of these diseases Requests for technical advice received by WHO and by the United Nations Food and Agricultural Organization (FAO) led to the setting up of a Joint WHO/FAO Expert Group on Zoonoses, which held its first session in Geneva from Dec 11-16, 1950 The report on this meeting has recently been published as World Health Organization Technical Report Series, No 40 During this session the group dealt with the question of whether to formulate international sanitary regulations to reduce the risk of spreading zoonoses Is it possible to establish sanitary regulations to prevent the spread of the zoonoses, similar to the regulations dealing with contagious diseases in man? The group discussed this question, and it became evident that it would be difficult to frame regulations acceptable to all countries for, while certain countries might be ready to impose the most stringent regulations, others would be unable to do so for economic reasons or because they are obliged to import livestock Nevertheless, the problem is worthy of further consideration. —Diseases Transmitted to Man by Animals, *Chronicle of the World Health Organization* May, 1951

PATHOGENESIS OF LIVER CIRRHOSIS IN SCHISTOSOMIASIS

Douglas Symmers, M D , New York

One of the most important of parasitic diseases is caused by the blood fluke, Schistosoma haematobium The disease is prevalent in North and South Africa, especially in Egypt, but also in the Sudan, Ethiopia, the Congo, and Rhodesia, as well as in Arabia, Persia, the west coast of India, Madagascar, Puerto Rico, and occasionally in Australia and the United States Cirrhosis of the liver is among the disabilities which are caused by or are associated with the presence of this parasite In Egypt there is a variety of cirrhosis which is attended by the presence of the ova of Bilharzia The lesion is characterized by enormous thickening of the periportal connective tissue and is sometimes called pipe stem cirrhosis In China and Japan and in the Philippines there is a disease known as Asiatic schistosomiasis, which is characterized by cirrhosis of the liver, splenomegaly, ascites, dysentery, progressive anemia, and sometimes focalized epilepsy The disease occurs extensively in one district of Japan, where it is designated "Katayama" disease It seems that Asiatic schistosomiasis, or, as it is otherwise known, urticarial fever, is not uncommon in these countries and is associated with the presence of parasites in the vessels of the alimentary canal and elsewhere and with eosinophilia, urticaria, and fever Cirrhosis of the liver together with its attendant ascites is usually a late manifestation, occurring from three to five years after infestation Another form of parasitic liver disease is attended by the deposition of schistosome eggs in the liver, the ova acting as foreign bodies which give rise to focal granulomas associated with the formation of multinuclear giant cells of the Langhans type Until the year 1926 Cutler [1] was able to collect reports of only 22 cases of schistosomiasis occurring in the United States and Canada However, that the incidence of the disease is apparently increasing in North America is indicated by the fact that since 1933 five cases have been subjected to necropsy at Bellevue Hospital alone

REPORT OF CASES

CASE 1 —E L , aged 45, a native of the French West Indies was admitted to Bellevue Hospital because of swelling of the legs and abdomen The patient stated that he consumed 5 or 6 oz (150 or 180 cc) of rum daily On admission, examination revealed physical signs of ascites, dilated superficial abdominal veins, and edema of the legs Death occurred Dec 31, 1933

Necropsy —The body was that of a poorly nourished adult white man weighing approximately 145 lb (65 8 kg) When the abdomen was opened, 500 cc of serosanguemeous fluid was removed The liver was greatly diminished in size, and the surface was diffusely nodular, the individual nodules measuring from 2 to 5 mm On section the organ cut with resistance and presented a granular appearance The liver weighed 1 500 gm Microscopically, the substance of the organ was divided into islands of variable sizes by overgrowth of connective tissue In a branch of the portal vein near the porta hepatis there was an area of fibrosis in which schistosome ova were present Another part of the same vein contained a solitary granuloma consisting of lymphocytes and eosinophils together with a giant cell which enclosed a well preserved ovum Near the walls of one of the larger intrahepatic branches of the portal vein were half a dozen schistosome ova lying in a matrix of lymphocytes, eosinophils, and an occasional polymorphonuclear neutrophil The spleen was absent, having been removed at operation On removal the organ measured 22 5 by 10 by 7 cm Microscopic examination showed diffuse dilatation of the sinuses hyperplastic lymph follicles, and irregularly scattered areas of fibrosis, hyalinization, and calcification in the walls of the central arteries No ova were detected The rest of the organs showed nothing of interest in the present connection

CASE 2 —A 38 yr -old Puerto Rican was admitted to Bellevue Hospital with the symptoms and signs of gastric ulcer and died Dec 24, 1948 as a result of profuse hematemesis

Necropsy —The body was that of a poorly nourished man On section the abdominal cavity was seen to be filled with blood clot After the clot was removed, the lower edge of the liver was found to extend 8 cm below the right costal margin On removal the organ weighed 2,200 gm It was greenish yellow, firm, and diffusely nodular The rest of the organs showed nothing of interest in the present connection Microscopic examination of sections removed from seven different parts of the liver showed in all of them widespread overgrowth of the perilobular connective tissue In one of the sections there was a solitary, small, circumscribed granuloma lying among the parenchyma cells It consisted practically exclusively of eosinophils arranged around a hyalinized schistosome ovum

CASE 3 —A 21-yr -old Puerto Rican woman was admitted to Bellevue Hospital complaining of shortness of breath and swelling of the legs On admission she presented the signs of an enlarged heart, with mitral insufficiency and mitral stenosis, together with swelling of the legs and abdomen and extreme dyspnea [2] At necropsy the liver was small, weighing 960 gm The consistency was increased, and the cut surface revealed numerous irregularly outlined dark red areas Microscopically, the structural unit consisted of a central vein surrounded by compressed liver cells, between which were collections of densely packed and partially autolyzed erythrocytes In addition, there were patchlike areas of interlobular fibrosis Many small granulomas were present in various parts of the liver and consisted of lymphocytes, eosinophils, and plasma cells arranged around the ova of schistosomes with or without the presence of multinuclear giant cells Microscopically, schistosome granulomas were also found in the pancreas, the cortex of the kidney, the myocardium, and the lung

CASE 4 —A 24-yr -old Puerto Rican woman died in Bellevue Hospital on April 30, 1950 There was nothing in the clinical history worthy of note in the present connection, except, perhaps, that death apparently was due to extensive thoracic and abdominal lymph node tuberculosis

Necropsy —The body was that of a fairly well nourished woman, weighing about 130 lb (59 0 kg) When the abdomen was opened, the liver was found greatly enlarged, the lower edge lying 10 cm below the costal margin in the right midclavicular line On removal the organ weighed 2,250 gm The capsule was smooth and glistening, the substance yellowish, and the lobular pattern was well preserved The thoracic and para aortic retroperitoneal lymph nodes were markedly enlarged and, on section, were almost completely caseous The rest of the organs showed nothing of interest in the present connection Microscopically, the lymph nodes showed epithelioid tubercles with extensive conglomerate areas of coagulation necrosis In the liver parenchyma were a few small, rounded granulomas composed of eosinophils, lymphocytes, and an occasional polymorphonuclear neutrophil, among which were multinuclear giant cells arranged around schistosome ova in various stages of disintegration Granulomas of similar or identical structure

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Director, Pathology Service, Department of Hospitals.

From the Laboratories of Pathology Bellevue Hospital

[1] Cutler M, Bilharziasis in the United States and Canada J A M A 86 816 (March 20) 1926

[2] Clark E and Graef I Chronic Pulmonary Arteritis in Schistosomiasis Mansoni Associated with Right Ventricular Hypertrophy Report of a Case Am J Path 11 693 1935

were found in the mucosa and immediately adjacent submucosa of the colon, in the lungs, and in the interstitial tissues of the pancreas

Case 5—A 30-yr-old Puerto Rican man on admission to Bellevue Hospital revealed signs of pulmonary tuberculosis with cavitation Otherwise the clinical history contained nothing of interest in the present connection

Necropsy—The body was that of a well developed, moderately well nourished man Examination of the various organs showed nothing of interest, with the possible exception of the liver, which weighed 1,500 gm and, on both inspection and section, appeared to be normal Microscopic examination of sections removed from three different parts of the liver showed in one of them a small solitary, circumscribed granuloma lying among the parenchymal cells near the surface The granuloma consisted of a preponderance of lymphocytes surrounding a hyalinized, twisted and distorted schistosome ovum Except for scattered foci of fat vacuoles, the rest of the liver was well preserved

SUMMARY AND CONCLUSIONS

In two of the five cases synopsized, cirrhosis of the liver was present and was attended by focal schistosomal granulomas lying in the walls of blood vessels or among the parenchymal cells, while cirrhotic changes occupied the perilobular spaces and arose independently of parasitic granulomas In a third case the liver was the seat of chronic passive congestion, together with patchlike areas of interlobular fibrosis Scattered throughout were numerous small granulomas consisting of variable numbers of eosinophils, lymphocytes, and plasma cells, with or without multinuclear giant cells arranged around the ova of schistosomes In the remaining two cases the changes in the liver were limited practically exclusively to the presence of occasional parenchymal granulomas formed around schistosome ova It is scarcely conceivable that relatively innocuous foreign bodies such as ova, acting alone, are capable of causing perilobular cirrhosis of the liver but that, when cirrhosis of the liver is associated with parasitic disease, such as schistosomiasis, the cirrhotic changes are to be attributed, most likely, to the miserable dietary conditions under which these patients live

140 E 28th St

COMPLICATIONS AND SURGICAL TREATMENT OF HIATUS HERNIA AND SHORT ESOPHAGUS WITH THORACIC STOMACH

Donald B Effler, M D
and
E N Collins, M D, Cleveland

In 1933, Akerlund [1] offered a simple classification of esophageal hiatus hernias The three basic types are (1) short esophagus with thoracic stomach, (2) normal esophagus with paraesophageal hernia, (3) normal esophagus with pulsion type hernia

Harrington's [2] excellent reports on the embryology, anatomy, and therapy of the various hiatal hernias have stimulated interest in their clinical recognition The erroneous concept that hiatus hernia is a benign, structural curiosity incapable of serious portent is rapidly declining

The least common of the hiatal hernias is that type associated with true short esophagus Certainly it is less commonly recognized by the clinician and the roentgenologist than are the more obvious paraesophageal hernias Endoscopists have called attention to short esophagus for years and, for the most part, have inherited the management of the disease With the general lack of interest and failure in recognition, there has been associated unawareness of the serious possibilities of acquired short esophagus Likewise, the development of satisfactory therapy has not kept pace with that of the commoner lesions observed elsewhere in the gastrointestinal tract

COMPLICATIONS OF SHORT ESOPHAGUS

Careful distinction must be made between symptoms and complications in evaluation of the extent of the disease process and its response to conservative therapy The majority of patients with acquired short esophagus have symptoms of dyspepsia, esophageal pain, dysphagia, nocturnal distress, and retrosternal discomfort The development of peptic ulcer or severe anemia is indicative of major complication and is not a part of the true symptom complex

The complications of acquired short esophagus and its associated thoracic stomach (Fig 1) may be classified simply in three categories

1 Bleeding—Massive or Occult
    a Hematemesis
    b Melena
2 Peptic Ulcer
    a With bleeding
    b With perforation
3 Stricture

Bleeding—This appears to be the commonest complication of symptomatic short esophagus In our experience the bleeding is usually occult The patient may be entirely unaware of the significance of black stools, attributing this occurence to diet or medications In five of our cases, the hemoglobin level has been below 7 0 gm, without the patient's comprehension of blood loss

Periodic, severe hematemesis does occur During 1950, we saw three patients who required emergency

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From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

Read at the Clinical Session of the American Medical Association Cleveland Dec. 5 1950

[1] Akerlund, A Die anatomische Grundlage des Röntgenbildes der Sogen "Erworbenen Hiatusbrüche Acta radiol 14 523 1933

[2] (*a*) Harrington S W Various Types of Diaphragmatic Hernia Treated Surgically Surg Gynec. & Obst. 86 735 (June) 1948 (*b*) Surgical Treatment of 105 Cases of Subdiaphragmatic Hernia West J Surg 14 255 (May) 1936 (*c*) Diagnosis and Treatment of Various Types of Diaphragmatic Hernia Am J Surg. 50 381 (Nov) 1940 (*d*) Surgical Treatment of More Common Types of Diaphragmatic Hernia Ann Surg 122:546 (Oct.) 1945

hospital admission because of hematemesis attributed to short esophagus Each patient required multiple transfusions to reestablish and maintain blood volume The frequency of hematemesis in patients with short esophagus has been commented on by Olsen,[3] Harrington,[2a] and Allison [4] Certainly the incidence is sufficiently common to warrant consideration in any case in which there is unexplained vomiting of blood

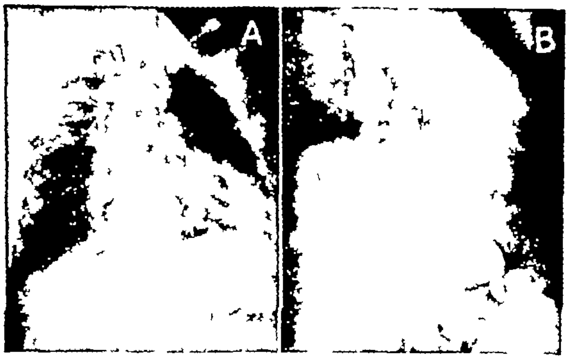

Fig 1—*A* roentgenogram illustrating true short esophagus associated with large thoracic stomach in a woman 60 The primary symptoms associated with this lesion were dyspepsia melena and severe secondary anemia *B* roentgenogram showing short esophagus in a man 61 with history of intractable dyspepsia over an 18 year period

Peptic Ulcer—The association of ulceration with acquired short esophagus has been recognized for many years In 1943, Allison [4] presented 10 cases of short esophagus with peptic ulceration The diagnoses were based on clinical, roentgenologic, and esophagoscopic findings Land [5] and Allison commented on the severity of the symptoms and the resistance to conservative therapy American writers [6] as well have emphasized the association of peptic ulceration in short esophagus

There seems to be little question that peptic ulcer may occur as either the initiating factor or as a secondary complication of short esophagus When ulcer is present, there is an associated esophagitis and gastritis, which greatly impedes accurate localization In the few patients on whom we have operated for intractable pain, bleeding, and dysphagia, the ulcer always has been in the thoracic stomach (Fig 2), we have not seen true peptic ulcer within the esophagus at operation In three cases the ulcer had perforated into the mediastinum, the sealed perforation involved the pericardium in one instance and the right lower lobe of the lung in another

Stricture—Dysphagia is the commonest symptom of short esophagus Whereas dysphagia may be transient in nature and due to neurogenic cardiospasm, an organic stricture is the result of a severe inflammatory process such as long-standing esophagitis *The stricture is due to a cicatrizing contracture at the cardiac end of the esophagus* Occasionally a fibrous stricture may be found in short esophagus associated with scleroderma, apparently esophagitis is not a factor in this instance

With development of stricture, there may be associated progressive shortening The degree of "esophageal insufficiency" is not fixed necessarily When the disease is acquired, the shortening is believed to be a reflex phenomenon with associated inflammatory and neurogenic factors If the entity is unrecognized or its treatment inadequate, the shortening may be progressive In severe cases, the esophagus may contract to approximately one-half of its expected normal length The opportunity for a clinical cure may be lost if the disease progresses to the ultimate degree

THERAPY

The management of short esophagus has been handled primarily by the endoscopist and gastroenterologist. Detailed programs of therapy have been offered by Olsen,[3] Polley,[7] Dick and Hurst,[8] Allison and associates,[4] and others Elaboration of the measures described is not relevant at this time, in general, two methods of conservative therapy have been suggested (1) dietary control with supplemental medication and (2) use of bougies for the relief of stricture

In their excellent review of the pathology and therapy of short esophagus with complication, Allison and his co-workers,[4] state they are not convinced that any form of treatment offers cure We are in accord with this statement Careful medical therapy and periodic use of bougies often will alleviate the symptoms of short esophagus but cannot cure the structural abnormality It seems logical, however, that the ideal therapy would involve *restoration of the esophagus to normal length and reduction of the stomach to the abdominal cavity* Unless this is accomplished, any therapy, *regardless of its intensity, must be considered as palliative only*

In evaluating the site of surgery for short esophagus one must distinguish between the uncomplicated and complicated types This statement may be amplified by a brief description of the methods of surgical treatment employed at the Cleveland Clinic

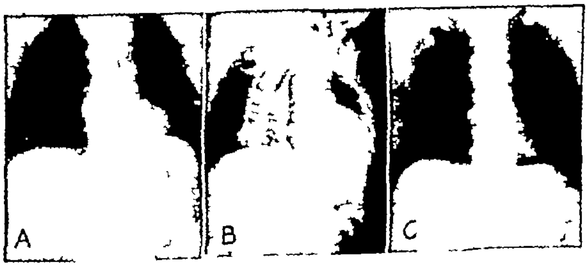

Fig 2—Examples of severely complicated short esophagus associated with peptic ulcer *A* perforating ulcer of thoracic stomach with direct extension into parietal pericardium *B* severe stricture with peptic ulcer of thoracic stomach perforating into lower lobe of right lung. *C* short esophagus with penetrating peptic ulcer in thoracic stomach associated with intractable pain

SURGICAL TREATMENT

Complicated Short Esophagus—When short esophagus is associated with peptic ulcer, stricture, and severe anemia, evaluation of the primary disease is difficult Prolonged hospitalization and intensive medical therapy *have yielded poor results too frequently* Also it may be impossible to exclude carcinoma by roentgen studies of esophagoscopy The generally unsatisfactory responses in our experience, plus the uncertainty of diagnosis, have prompted a radical approach in selected cases

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[3] Olsen, A M and Harrington S W Esophageal Hiatal Hernias of Short Esophagus Type J Thoracic Surg **17** 189 (April) 1948

[4] Allison P R Johnstone A S and Royce G B Short Esophagus with Simple Peptic Ulceration J Thoracic Surg **12** 432 (June) 1943

[5] Land F T Congenital Short Esophagus with Thoracic Stomach J Laryng & Otol **61** 641 (Dec) 1946

[6] Harrington [2a b] Olsen and Harrington [3] Putney F J Thoracic Stomach Produced by Esophageal Hiatus Hernia and Congenital Short Esophagus, Ann Int Med **25** 1094 (June) 1948

[7] Polley H. F Congenital Short Esophagus with Thoracic Stomach and Esophageal Hiatus Hernias Report of 47 Cases J A. M. A **116** 821 (March 1) 1941

[8] Dick R. C S and Hurst A Chronic Peptic Ulcer of Oesophagus and Its Association with Congenitally Short Oesophagus and Diaphragmatic Hernia Quart. J Med **11**: 105 (April) 1942.

We believe that surgical treatment of the patient with the complicated short esophagus is a serious undertaking Satisfactory preparation for operation is not easy nor always possible Anemia, malnutrition, and chronic disease increase the risk of surgery Narcotic dependency is occasionally a factor in the patient with intractable pain due to penetrating ulcer

The operation employed in these patients has been similar to that used for esophageal malignancy Essentially it involves a transthoracic resection of the diseased esophagus and cardia with esophagogastrostomy (Fig 3) The long-standing inflammatory process produces severe reaction in the mediastinum, rendering the dissection considerably more tedious than is usual for esophageal tumor Even at the time of surgery, it may be impossible to exclude the possibility of neoplasm

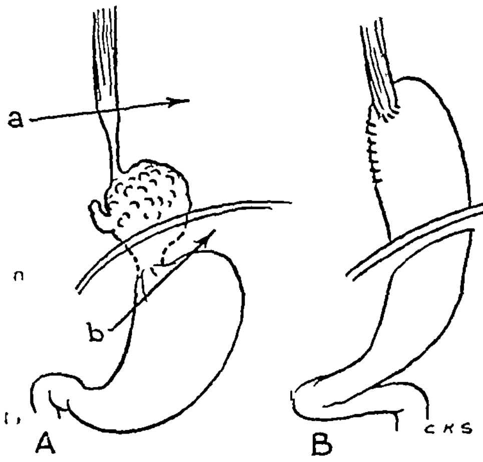

Fig 3 —Schematic outline of surgical technic employed in complicated short esophagus associated with peptic ulcer as illustrated in Figure 2. *A* arrows represent lines of resection with removal of diseased segment of esophagus and cardiac portion of stomach *B* diagram of completed esophagogastrostomy Cardiac stomach has been resected and anastomosis effected on greater curvature and anterior wall of stomach

We have performed this operation on six patients, all of whom were benefited Actually the procedure is palliative in nature, since the patient with esophagogastrostomy is rarely a completely happy person The operation does relieve the ulcer pain, stricture, and bleeding We insist, however, on a prolonged medical regimen in which to manage the expected symptoms of thoracic stomach

UNCOMPLICATED SHORT ESOPHAGUS

The term "uncomplicated" is used here to denote the absence of secondary physical changes altering the morphology of a short esophagus In an effort to develop a simple definitive surgical procedure for correction of this defect, a distinction must be made between the structurally uncomplicated short esophagus and the complicated type described in the foregoing paragraphs Actually the patient who presents the simpler lesion may have suffered any of the listed complications With recognition of the limitations of conservative therapy for a structural defect, a search has been made for a simple corrective procedure Harrington and Olsen have stated repeatedly that the logical treatment of symptomatic short esophagus would involve the reduction of the thoracic stomach within the abdomen When this is possible, there may be permanent remission of symptoms Adjunct procedures, including phrenic crush, gastrostomy, and vagotomy, have been attempted with indifferent results

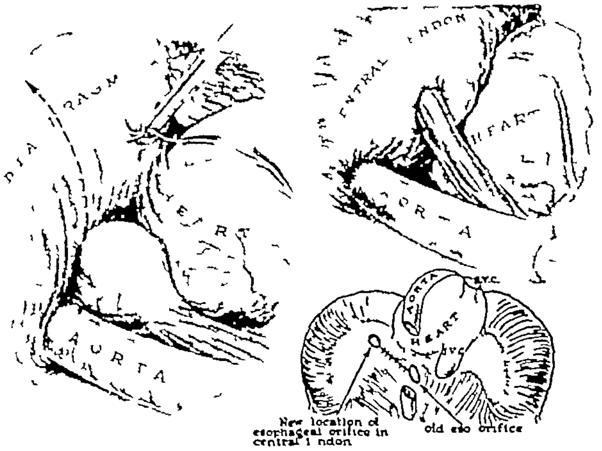

Fig 4 —Artist s conception of anatomic features as viewed through thoracotomy incision during operation for structurally uncomplicated short esophagus with thoracic stomach

Although the esophagus has been shortened e mentally by vagal stimulation,[9] we are unaware of method by which the diseased organ is lengthened cases of minimal shortening, the defect between cardiac esophagus and hiatus may be bridged by traction and fixation after adequate mobilization of the esophagus Sectioning of the vagus alone will permit lengthening b

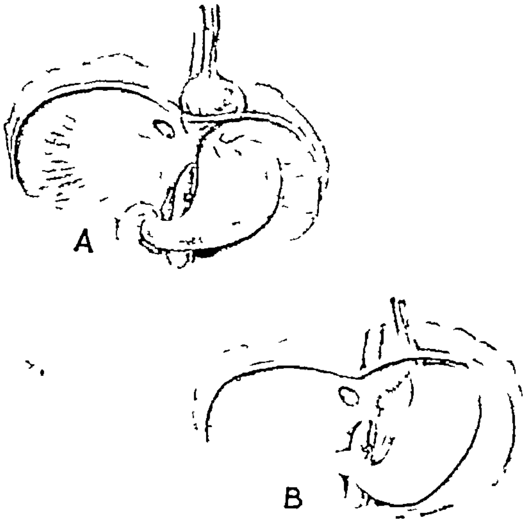

Fig 5 —*A* schematic representation of short esophagus with thoracic stomach and relation to leaves of diaphragm *B* reduction of stomach below diaphragm following paralysis of phrenic nerve and transplantation of esophageal hiatus to central dome of diaphragm

traction but the side effects of vagotomy may offset the advantage of such a procedure

A comparatively simple operation has been used at the Cleveland Clinic with promising results in a small series of cases The operation is basically a transthoracic reduction of the stomach, with alteration in the diaphragmatic hiatus and phrenic paralysis (Figs 4 and 5) Although the esophagus itself is not appreciably lengthened, the vertical diameter of the thoracic cavity is shortened

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[9] Dey F L Gilbert N C Trump R and Roskelley R C Reflex Shortening of Esophagus in Experimental Animal with Production of Esophageal Hiatus Hernia J Lab & Clin Med 21 499 (May) 1936

The technic parallels the procedure described by Merendino, Varco, and Wangensteen [10] in correction of paraesophageal hiatus hernia A thoracotomy is performed at the level of the eighth left rib, and the pulmonary ligament divided The terminal esophagus and thoracic stomach are completely mobilized from within the mediastinum The phrenic nerve is crushed, and the diaphragm is allowed to elevate A site is selected for the new hiatus, and the diaphragm is incised from this point through the anatomic hiatus Care must then be taken to free the stomach from its posterior and medial attachments along the crura of the diaphragm Emphasis is placed on the necessity for complete mobilization of the terminal esophagus and thoracic stomach, with separation of the mediastinal and subdiaphragmatic attachments It is not necessary for one to divide the gastrohepatic or gastrolienal ligaments After mobilization is accomplished, the cardia of the stomach is brought laterally to the site of new hiatus, the right and left crura are approximated with interrupted double silk sutures, with resultant obliteration of the original hiatus medially and posteriorly to the cardia The stomach is reduced below the diaphragm, and the tendinous portion is closed around the cardiac esophagus One should observe care in tacking the new hiatus completely around the esophagus by means of interrupted silk sutures to prevent sliding or herniation When the repair is accomplished, the cardiac stomach is at the highest point under the dome of the diaphragm, the position normally occupied by the fundus Because the diaphragm is paralyzed, the dome is considerably elevated The combination of new hiatus, plus phrenic paralysis, greatly diminishes the distance traversed by the esophagus In this way, a previously short esophagus may be adequate in length Although the esophagus itself is not lengthened, the required span is shortened

COMMENT

Greater emphasis must be placed on the recognition of short esophagus and its associated complications Special technics used by the experienced roentgenologist, including examinations in the Trendelenburg position, are of paramount importance Inadequacy of medical therapy for short esophagus is largely due to the frequent erroneous diagnosis of duodenal ulcer With early recognition of the entity and adequate *medical therapy*, the patient may be *spared* prolonged discomfort and serious complication

When serious complications have ensued and the disease is refractory to therapy, the possibilities of surgical relief must be considered Whereas the outright indications for surgery are by no means crystallized in our minds, we believe that a more radical approach will be employed in the future It must always be borne in mind that short esophagus is a structural defect that cannot be reduced by conservative measures Although the symptoms may be relieved in many cases by intensive medical therapy, the program must be continued through life, since the underlying cause of the symptoms remains We feel that there is an excellent possibility that surgery will offer permanent relief in selected cases

Cleveland Clinic (Dr Effler)

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[10] Merendino K A Varco R. L. and Wangensteen O H Displacement of Esophagus into New Diaphragmatic Orifice in Repair of Para Esophageal and Esophageal Hiatus Hernia Ann Surg **129** 185 (Feb) 1949

CLINICAL NOTES

APLASTIC ANEMIA COMPLICATING STREPTOMYCIN TREATMENT OF PULMONARY TUBERCULOSIS

REPORT OF A CASE, WITH RECOVERY

Milton S Sacks, M D , George T Bradford, M D
and
Carroll L Spurling, M D , Baltimore

The major toxic manifestations accompanying prolonged streptomycin therapy are well known Renal damage, vestibular dysfunction, dermatitis, and other sensitivity reactions have all been observed The reported incidence of blood dyscrasias, however, has been very low *The initial report of the Streptomycin Committee* of the Veterans Administration and offices of the Surgeons General of the Army and Navy,[1] stated that of 800 patients treated with streptomycin, in five (0 7%) relatively mild leukopenia with neutropenia developed One case of agranulocytosis occurred in a patient with miliary tuberculosis These reactions were felt to be quite definitely caused by streptomycin in the sense that they were alleviated by its withdrawal Deyke and Wallace [2] recently reported two cases of aplastic anemia, one of which terminated fatally, during streptomycin therapy of 400 patients with tuberculosis at Fitzsimons General Hospital Autopsy of the fatal case revealed pronounced hypoplasia of the bone marrow In reviewing the toxic manifestations encountered during the treatment of 57 patients in the Cornell-New York *Hospital series*, McDermott [3] reported that relative granulocytopenia had been observed in a few cases with acute hematogenous tuberculosis The total leukocyte counts eventually rose to within normal range despite the continuation of streptomycin therapy In one patient with acute brucellosis, who had been receiving 6 gm of streptomycin *daily, thrombocytopenia* developed Recovery was prompt and complete after the discontinuation of

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Dr Lawrence M Serra kindly permitted us to study this patient.

Baltimore Rh Laboratory Fellows in Medicine (Drs Bradford and Spurling)

From the Department of Medicine University of Maryland School of Medicine

[1] The Effect of Streptomycin upon Pulmonary Tuberculosis Preliminary Report of a Cooperative Study of 223 Patients by the Army Navy and Veterans Administration Am Rev Tuberc **56** 485-605 (Dec) 1947

[2] Deyke V F and Wallace J B Development of Aplastic Anemia During the Use of Streptomycin Report of 2 Cases, J A M A. **136** 1098 (April 24) 1948

[3] McDermott W Toxicity of Streptomycin Am. J Med **2**:491 500 (May) 1947

streptomycin A recent report[4] of the Veterans Administration Streptomycin Committee stated that in 5 2% of 1,751 patients treated with streptomycin some type of blood dyscrasia developed

We wish to report a case of aplastic anemia, which occurred as a complication of streptomycin therapy of pulmonary tuberculosis The patient eventually recovered

REPORT OF A CASE

H W, a white housewife, aged 35, was first admitted to the University Hospital on Aug 27, 1945 She had been in good health until four months prior to admission, when she noted the onset of dyspnea, nervousness, anorexia, and weight loss Two months prior to admission she had been seen by a physician who suspected the existence of hyperthyroidism and advised hospitalization

The family history revealed that her father had died of tuberculosis Review of her past history disclosed an episode of pneumonia at 1 yr of age At the age of 9 yr she had an acute bout of fever and painful swollen knee joints No diagnosis was made at that time, but she was later told she had rheumatic heart disease with valvular damage The patient had two attacks of acute pyelitis in 1929 and in 1931 There were two uneventful pregnancies A review of systems revealed frequent acute respiratory infections

On physical examination the patient appeared poorly nourished and chronically ill There was a slight generalized enlargement of the thyroid gland A harsh blowing systolic murmur was heard in the mitral area The heart was not enlarged Examination of the chest revealed limitation of motion on the right side There was marked dullness to percussion at the right apex posteriorly from the first to the fourth ribs Breath sounds were decreased and tactile fremitus was increased over this area No rales were heard The left lung was normal The remainder of the physical examination was essentially normal

Admission laboratory studies revealed the following data red blood cell count, 4,250,000 per cubic millimeter, hemoglobin value, 13 gm , leukocytes, 10,200 per cubic millimeter, with a differential count of 60% neutrophils, 28% lymphocytes, and 12% monocytes platelets, 310,000 per cubic millimeter Routine urine and stool examinations were noncontributory All blood chemical studies were within normal limits An electrocardiogram did not indicate any deviations from normal Repeated basal metabolism rates were normal An x ray of the chest revealed a large amount of patchy infiltration involving the right lung from the apex to the anterior end of the sixth rib Similar infiltration was present in the left lung from the first to the fourth interspaces No definite cavities were noted The cardiac shadow was normal On Aug 31 sputum examination was positive for tubercle bacilli

The patient did not receive any therapy while hospitalized She was discharged on Sept 6, 1945, arrangements having been made for her to be treated at home by a chest specialist A right pneumothorax was performed and maintained The patient was kept on strict bed rest for 12 mo Sputum examinations became negative and moderate activity was allowed The patient gained weight and improved over a two year period Serial x rays of the chest revealed no change in the left lung The pneumothorax was constantly maintained on the right

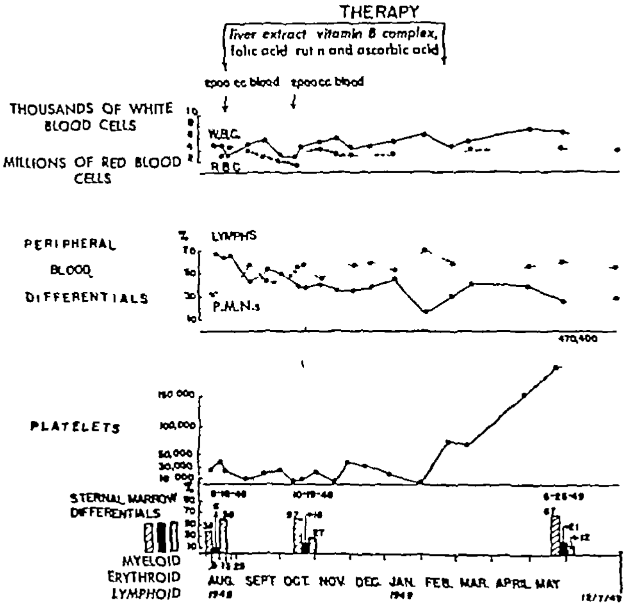
On Feb 20 1948, her sputum again became positive for acid fast organisms Because of this finding the patient was placed on strict bed rest and started on intramuscular streptomycin, 0 8 gm daily (16 mg per kilogram) She continued to receive this dose until June 20, 1948 a period of 122 days The total dose of streptomycin given was 98 gm During this period the lesion in her left lung cleared considerably and she felt much improved Sputum examinations became negative and other routine laboratory studies were said to have been within normal limits

In July 1948, she contracted an acute respiratory infection after which she noted the appearance of marked pallor recurrent elevations of temperature and numerous petechiae and purpuric spots on the extremities Several episodes of spontaneous epistaxis occurred She was seen by her physician and hospitalization was again advised

The patient was readmitted to the hospital on Aug 5, 1948 The significant physical findings consisted of marked pallor of the skin and mucous membranes, numerous petechiae over the extremities and trunk, several large ecchymotic areas on the extremities, a right pneumothorax and a systolic and rumbling presystolic murmur over the mitral area Remainder of the physical examination was essentially noncontributory

Admission laboratory studies revealed a red blood cell count of 2,980,000 a hemoglobin value of 10 2 gm , 4,850 leukocytes with a differential count of 34% neutrophils and 66% lymphocytes, and platelets, 23,840 (counted by Olef's method) All blood chemical studies were within normal limits The bleeding time was 2 min 45 sec , the coagulation time (Lee-White), 7½ min , clot retraction was not complete in 24 hr The prothrombin time was 18 sec with a control of 18 sec The capillary fragility test was markedly positive Several blood cultures and sputum examinations were negative X-ray of the chest revealed a right pneumothorax with an excellent degree of collapse There was slight patchy infiltration demonstrable in the upper left lung No specific cavitation was present

She was given 2,000 cc of whole blood, and, although the red blood cell count and hemoglobin value returned to normal levels, the leukopenia and thrombocytopenia persisted (chart) The differential count continued to show a high percentage of mature lymphocytes Sternal bone marrow examination was done on Aug 18, 1948 The smears showed a marked decrease in cellularity, the predominant cells being small mature lymphocytes Differential count was as follows myeloblasts 3%, promyelocytes 2% myelocytes 2% metamyelocytes 12%, segmented neutrophils 17%, mature lymphocytes 58% and erythroid elements 6% Megakaryocytes were not observed A diagnosis of hypoplastic anemia with secondary thrombocytopenia was made



Summary of patient s course and treatment.

A therapeutic regimen consisting of liver extract, intramuscular vitamin B complex, folic acid rutin and ascorbic acid was initiated The patient was discharged from the hospital on Aug 24 1948 by which time the fever had subsided and the hemorrhage tendency had become less marked The blood studies on that day were as follows red blood cell count 4 050 000 hemoglobin value 11 6 gm 3,000 leukocytes with a differential count of 70% lymphocytes 27% neutrophils 2% eosinophils and 1% monocytes platelets 35 000

Periodic blood studies were made during the next six weeks and therapy was continued as before Occasional spontaneous epistaxis and small showers of petechiae occurred Menstrual periods were somewhat prolonged and profuse Slight hematuria was also observed on several occasions in September On Oct 1, 1948, marked pallor of the skin and mucous membranes was again noted Laboratory studies revealed a red blood cell count of 2,390,000, hemoglobin value of 7 4 gm, 3,050 leukocytes, with a differential count of 44% neutrophils, 48% lymphocytes, 6% monocytes and 2% eosinophils, and 27,600 platelets

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[4] Streptomycin in the Treatment of Tuberculosis report of the Council on Pharmacy and Chemistry J A M A 138 584 593 (Oct 23) 1948

She was readmitted to the hospital on Oct 16, 1948 Marked pallor, numerous petechiae, and several ecchymotic areas were noted on the extremities The red blood cell count was 1,910,000 and the hemoglobin value was 6 6 gm The patient was again given 2,000 cc of whole blood over a period of four days Bone marrow examination on Oct 18 revealed a moderate increase in cellularity as compared to the marrow previously examined The differential count was as follows myeloblasts 3 5%, promyelocytes 4 0%, myelocytes 9 5%, metamyelocytes 17 0%, segmented neutrophils 23 5%, mature lymphocytes 25%, monocytes 1%, plasma cells 1%, and erythroid elements 15 5%

The patient was discharged from the hospital on Oct 19, 1948, somewhat improved She continued on the therapeutic regimen noted above For a period of several months thereafter there was gradual clinical and hematological improvement The hemorrhagic manifestations diminished The red blood cell count was maintained between 3½ and 4 million without further transfusions The white blood cell count fluctuated between 4,000 and 6,000 and the differential counts became normal in December, 1948 However, the thrombocytopenia persisted In February, 1949, blood studies were as follows red blood cell count 3,500 000, hemoglobin value 11 4 gm 6,600 leukocytes with a differential count of 74% neutrophils, 18% lymphocytes 6% monocytes, and 2% eosinophils, platelets 3,300

The vitamin B complex and folic acid were discontinued in February From February to April 1949, there was further hematologic improvement The platelet level rose steadily Liver extract was discontinued in March, 1949 Blood studies on April 27 1949, revealed a red blood cell count of 4,480 000, hemoglobin value of 13 8 gm, 7,300 leukocytes with a differential count of 59% neutrophils, 39% lymphocytes and 2% monocytes, and 140,800 platelets On May 25, 1949 another bone marrow aspiration was performed Examination of the smears revealed normal cellularity The differential count was as follows myeloblasts 1 0%, premyelocytes 5 0% myelocytes 10%, neutrophilic metamyelocytes 31%, segmented neutrophils 19 5%, lymphocytes 13 0%, and erythroid elements 20 5% Several megakaryocytes were seen Peripheral blood studies were as follows red blood cell count, 4,520,000, hemoglobin value, 13 3 gm, 5,700 leukocytes with a differential count of 61% segmented neutrophils 32% lymphocytes, 4% monocytes, 2% eosinophils, and 1% basophils platelets, 200,000

In Aug 1949, progression of the tuberculous process in the left apex necessitated readmission to the hospital for performance of a lucite plumbage The patient withstood the procedure well and had no unusual hemorrhagic phenomena The blood picture was essentially normal at this time except for moderate thrombocytopenia (260,000 per cubic millimeter) When last seen on Dec 7, 1949, she was completely asymptomatic, had gained weight, and presented the following blood picture red blood cell count, 4,970,000, hemoglobin value, 14 1 gm, 6,600 leukocytes with a differential count of 58% neutrophils, 33% lymphocytes, 6% monocytes, 2% eosinophils and 1% myelocytes platelets, 470,400

COMMENT

When first seen in 1945, prior to streptomycin therapy, the patient's peripheral blood picture was essentially normal During the four-month period of streptomycin administration she was at home, and there were no recorded blood counts Several weeks after discontinuance of the drug, purpuric manifestations appeared On admission to the hospital, detailed study revealed a picture compatible with the diagnosis of aplastic anemia There was no history of exposure to other agents or drugs which have been reported to produce hypoplasia of the bone marrow, nor was there any evidence of miliary spread of the tuberculous infection

During the first six months after streptomycin had been discontinued, very little hematological improvement occurred in spite of supportive therapy The leukocyte count and differential pattern became essentially normal by December, 1948, approximately six months after onset of illness The hemoglobin and red blood cell values rose to normal during the next three months The platelets, on the other hand, did not reach normal until approximately 16 mo after onset It is interesting to note that during the last hospital admission (August, 1949) when exacerbation of the tuberculous process had occurred, no hematological regression was observed The most recent blood studies indicate an essentially normal picture

The evidence incriminating streptomycin as the agent responsible for the aplastic anemia in this case is, of course only circumstantial One must consider first the influence of tuberculosis itself on the hematopoietic system It is well known that anemia, granulocytopenia, and/or thrombocytopenia have been observed in acute hematogenous tuberculosis with bone marrow involvement A decrease in granulocytes and/or platelets has also been observed following the injection of tuberculin in patients with active pulmonary tuberculosis [5] The latter observation led to the suggestion that perhaps a similar mechanism may be responsible for the granulocytopenia and thrombocytopenia occasionally seen in such patients However, a careful search of the literature failed to reveal typical cases of aplastic anemia due to tuberculosis per se except when miliary spread was present The case presented here displayed no evidence of miliary dissemination

The mechanism of the development of hypoplasia of the bone marrow during streptomycin therapy is unknown No evidence exists for a direct toxic effect on the hematopoietic system However, bone marrow hypoplasia can occur as a result of the creation of a folic acid deficiency [6] Lucherini and Schiavetti [7] observed that streptomycin administered orally to rats and chickens produced a macrocytic anemia, granulocytopenia, and hypoplasia of the bone marrow The peripheral blood picture as well as the bone marrow were rapidly restored to normal by the oral or parenteral administration of folic acid The experiments seemed to indicate that, at least in rats and chickens, the bacterial flora of the intestinal tract plays an important part in the synthesis of folic acid It was suggested that the toxic hematopoietic effect of streptomycin was due to its bactericidal action on the intestinal flora The possibility that prolonged administration of streptomycin may, as a result of its effect on the bacterial flora of the human intestinal tract, produce a folic acid deficiency must be considered This could result in hypoplasia of the bone marrow

In the treatment of acute leukemia with the folic acid antagonists, some authors [6b] have observed hypoplasia of

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5 Muller G L Clinical Significance of the Blood in Tuberculosis New York Commonwealth Fund 1943 chap 2

6 (a) Jukes T H and Stokstad E L R Pteroylglutamic Acid and Related Compounds Physiol Rev 28 51 106 (Jan) 1948 (b) Sacks M S, Bradford G T and Schoenbach E B The Response of Acute Leukemia to the Administration of Folic Acid Antagonists Aminopterin and Amethopterin Report of 14 Cases, Ann Int Med 32: 80-115 (Jan) 1950

Lucherini T and Schiavetti L Experimental Macrocytic Anemia on Oral Administration of Streptomycin and Restoration of Blood Picture to Normal by Administration of Folic Acid Policlinico (Sez prat) 55 [illegible] 73 (Jan 19) 1948 the bone marrow, ulcerative stomatitis, alopecia, and diarrhea Beham and Perr[8] have reported the development of an ulcerative aphthous stomatitis in three patients with pulmonary and extrapulmonary tuberculosis during streptomycin therapy The hematological picture was not discussed, but the description and photographs of the ulcerative stomatitis appeared quite similar to that observed by us in patients with a folic acid deficiency induced by the therapeutic use of folic acid antagonists

Since streptomycin therapy has become widespread in the treatment of many human infections, the minor toxic manifestations will probably assume greater importance At the present time, it would seem advisable to consider anemia, granulocytopenia, and thrombocytopenia collectively as a manifestation of streptomycin toxicity and an indication for the immediate discontinuation of therapy

SUMMARY

A case of aplastic anemia following prolonged administration of streptomycin is presented Gradual recovery took place over a period of 16 mo after the discontinuation of the drug

It is suggested that prolonged courses of streptomycin, by virtue of an effect upon the bacterial flora of the human intestinal tract, may produce a folic acid deficiency with subsequent hypoplasia of the bone marrow

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[8] Beham H and Perr H Stomatitis Due to Streptomycin J A M A 138 495-496 (Oct 16) 1948

THROMBOPENIC PURPURA DURING STREPTOMYCIN TREATMENT OF TUBERCULOUS EMPYEMA

REPORT OF A CASE

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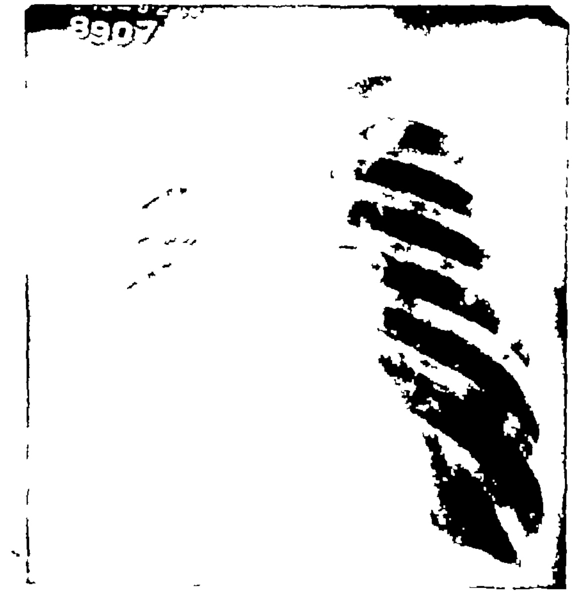
and
Seymour Fisher, M D, Phoenix, Ariz

Incidence of severe toxic reactions in the hematopoietic systems of patients treated with streptomycin has been very small The Central Streptomycin Committee of the Veterans Administration reported only 0 6%-2 3% of blood dyscrasias in 1,751 patients treated under streptomycin regimens in the federal hospitals[1] The great majority of these reactions consisted of relatively mild leukopenia and granulocytopenia, however two cases of aplastic anemia apparently caused by streptomycin were reported by Deyke and Wallace[2] A M Walker,[3] secretary of the Central Streptomycin Committee informed us that he knew of no case of thrombopenic purpura occurring during the administration of streptomycin in any patient treated in the United States In one patient with miliary tuberculosis treated with streptomycin by Feld[4] agranulocytosis developed Benhamou and others[5] reported that in one child with tuberculous meningitis, treated with 2 gm of streptomycin daily, agranulocytosis with purpura developed on the 30th day of therapy, and the child died within 48 hr Keefer and others[6] in a report of 1 000 cases treated with streptomycin, mentioned one case of purpura hemorrhagica occurring in a patient treated with streptomycin Since no details were given, the case presumably was fairly mild To our knowledge there has been no instance in the American literature of severe thrombopenic purpura developing during or after streptomycin therapy It may, therefore, be of interest to report one such case occurring in a patient treated with streptomycin bringing to the attention of the medical profession the possibility of such a reaction especially when a patient has a history of previous administration of this antibiotic

REPORT OF A CASE

History—B S a white man aged 32, gave a history suggestive of pulmonary tuberculosis since July 1946 that was confirmed bacteriologically and by x-ray studies a month later when a diagnosis of active pulmonary tuberculosis of the right upper lobe was made Pneumothorax was started on the right side in September, 1946 and was followed by pneumonolysis The patient responded well to therapy, smears and cultures of his sputum and gastric contents became negative for acid fast bacilli

During April, 1947, a course of streptomycin was started, but after the administration of only 2 gm over a period of two days further antibiotic therapy was refused by the patient because of local burning pain About May, 1948 a tuberculous empyema developed on the right side the patient was treated by repeated aspirations and irrigations of the pleural cavity with chloroazodin (azochloramid®) solution There was some improvement in his condition



Roentgenogram of chest Sept 2, 1948 showing tuberculous empyema

Physical Examination and Laboratory Data—On Aug 31 1948 he was admitted to Billings Veterans Administration Hos

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From the Chest and Tuberculosis Service Billings Veterans Administration Hospital Ft Benjamin Harrison Ind

Chief Medical Service Veterans Administration Hospital Ft Wayne (Dr Rudensky) and manager Veterans Administration Hospital Phoenix Ariz (Dr Fisher)

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration

[1] Streptomycin in Treatment of Tuberculosis Report of the Council on Pharmacy and Chemistry J A M A 138 584 (Oct 23) 1948

[2] Deyke V F and Wallace J B Development of Aplastic Anemia During the Use of Streptomycin Report of 2 Cases J A M A 136 1098 (April 24) 1948

[3] Walker A M Personal communication to the authors

[4] Feld D D Agranulocytosis During the Streptomycin in Tre[illegible] of Miliary Tuberculosis Am Rev Tuberc [illegible]

[5] Benhamou F Destaing F and Choh[illegible] [illegible] Course of Treatment with Streptomycin [illegible]

[6] Keefer C S and others Streptomycin [illegible] A Report of 1 000 Cases J A M A [illegible]

pital, where a physical examination seemed to indicate that he was in good general condition His temperature was 98 4 F, pulse, 80, blood pressure, fluctuating between 156/92 and 126/90 No history suggestive of any previous blood dyscrasias was elicited, no signs of petechiae or ecchymoses were noted His medication consisted of vitamins, and occasional phenobarbital and secobarbital (seconal®) sodium

Operation—Because of a markedly thickened pleura interfering with reexpansion of the right lung, tuberculous empyema, and extensive nodular involvement of the right upper lobe, a decortication of the right lung and a five rib thoracoplasty were performed by Dr L Nehil on Oct 29, 1948, and Nov 15, 1948, respectively

On Oct 28, 1948, in anticipation of surgery, streptomycin therapy had been started, 0 5 gm being given twice a day for 25 days Penicillin (50,000 units every three hours) was administered at the same time for 26 days On Oct. 30, 1948, the patient began to run a fever, rising to 100 8 F, which persisted for about a week His general condition was fair Because of secondary anemia, 500 cc of blood were given Nov 5, 1948

Laboratory Findings in a Case of Thrombopenic Purpura

Date	Erythrocytes (Millions per Cu Mm)	Leukocytes (Thousands per Cu Mm)	Hemoglobin (Gm)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)	Platelets (Thousands per Cu Mm)	Bleeding Time (Min Sec)	Coagulation Time (Min Sec)	Clot Retraction Time	Urine Examination
8/ 4/48	5.26	13 6	15 7	66	26	2	6					Negative
9/ 1/48		11 1		65	31	3						Negative
10/26/48	4.97	9.5	15 0	58	42				1 55	4 48		Negative Rare WBC
11/ 3/48	3 18	6 9	9.5	76	24							1 3 WBC Negative
11/ 8/48	3 86		12 0									
11/15/48	2 79	11 7	8.5	75	16	4	5					
11/18/48	2 73		8.5									Negative
11/22/48	3 43	9 4	10.5	62	28	5	5					
11/24/48	3 49	9.3	11 0	85	14	1			3 30	7 00		Gross blood and many RBC
11/28/48	3 21		10 0	80	20						Very poor at 5 hr none at 2 hr	
11/30/48								None seen in 1 000 cells	5 00	5 00	Slight retraction in 24 hr	
12/ 8/48	4 1	9 5	13.5	66	27	4	2					
12/10/48											Slight retraction after 24 hr	Many RBC Albumin (trace)
12/14/48												
12/15/48	5.21	10.8	16.0	66	32	2		82 0	7 37			Many RBC Albumin 4+
12/27/48	5 41	9.5	15 0	80	18	2		40 0	3 42	4 10	Very poor after 8 hr	1 3 RBC per high power field
12/30/48	4.3	12 1		65	28	3	4		3 25	5 55	Very poor after 8 hr	Negative
1/ 9/49	4 43	10.85	15 0						4 40	5 55	Very poor after 6 hr	Negative
1/16/49	4.36							58 0	14 00	7 00	Very poor	
1/26/49	4 02	14 4	13.5	72	20	2	5					
1/27/49								90 0		7 30		

Postoperative Course—After the thoracoplasty the patient bled more than usual from the operative wound, his hemoglobin dropped to 8 5 gm, while his red blood cell count was reported to be 2,790,000 Four transfusions, each of 500 cc of blood, were given to him, every other day, to combat the effects of hemorrhage

On Nov 24, 1948, he was returned to the tuberculosis service, where, on admission, he appeared to be pale and anxious numerous petechiae and ecchymoses were scattered over his abdomen, arms, and legs as shown in the illustration His spleen did not appear to be enlarged at that time While under medical observation he complained of attacks of pain in the lumbar region and gross hematuria and nosebleeds developed His pulse fluctuated between 80 and 100, blood pressure between 148/98 and 98/58 He ran an occasional low grade fever, rising to about 99 6 F On Nov 28 1948 his hemoglobin was found to be 10 gm, his red blood cell count was 3,210,000 The Leede Rumpel phenomenon was markedly positive Clot retraction on Nov 28, 1948, was reported to be very poor in five hours, a few days later, only slight clot retraction was noted in 24 hr There was a very marked decrease in blood platelets, none being observed in 1,000 cells on Dec 3, 1948 Examination of urine repeatedly showed gross blood and 4+ albumen, and (on microscopic examination) innumerable red blood cells and white blood cells were seen The prothrombin percentage fluctuated between 85% and 95%, icterus index, between 5 and 8 The red blood cell fragility and congo red test were essentially normal Numerous sputum examinations and gastric contents examinations, including four cultures, were negative for acid fast bacteria The patient was tested with a 1 8,000 streptomycin solution intracutaneously, an ecchymosis was found the next day at the test site This test was hard to interpret because of a tendency for ecchymoses to develop in the patient after a mild trauma On Dec 28, 1948, Dr P J Fouts reported that a bone marrow smear showed some hyperplasia of the granular cells with a 7% eosinophilia The megakaryocytes were increased in number, but no blood platelet formation was noted It was felt that findings in the bone marrow were compatible with a diagnosis of allergic thrombopenic purpura, probably due to streptomycin The patient was empirically given vitamin K, crude liver extract, rutin, and occasional injections of meperidine (demerol®) hydrochloride for pain but there was no improvement in his condition Numerous petechiae and ecchymoses continued to develop On Nov 30, 1948, transfusions of citrated blood varying in amount from 250 cc to 500 cc each were started These were given every other day for two weeks, because of no definite improvement, 10 daily transfusions were then given About Dec 18, 1948, the interval between transfusions was increased to three days, and they were finally discontinued on Dec 30, 1948 Because of an allergic reaction, antihistamines were administered to the patient at the same time

With this treatment, the patient improved gradually His hemorrhages decreased in amount and became less frequent the petechiae and ecchymoses subsided The Leede Rumpel phenomenon became less positive, and on Jan 11 1949, it was es sentially normal On Dec 28, 1948, the spleen had appeared to be somewhat enlarged for the first time and it remained definitely palpable for a few weeks The patient s hemoglobin value and red blood cell count increased gradually, showing a tendency to become stable without the help of transfusions Blood platelets increased gradually and were reported to be 32 000 per cubic millimeter on Dec 15, 1948 58,000 on Jan 16, 1949, and about 90,000 at the beginning of February, 1949 Details of the laboratory findings are given in the Table It was the impression of the medical staff that the patient had a thrombopenic purpura, probably caused by streptomycin A splenectomy was considered, but in view of the progressive although slow improvement in the patient s condition, the decrease in the amount of bleeding, the increase in blood platelets, and the apparently allergic type of purpura it was felt that a splenectomy was not indicated, especially in view of the preceding two major operations

During the patient s last examination at Billings Veterans Administration Hospital on Feb 2, 1949, only a few small petechiae were noted on his forehead while his spleen showed evidence of a decrease in size

The patient left the hospital against medical advice on Feb 2, 1949 He was seen as a follow up patient on June 22 1949 at Hines (Ill) Veterans Administration Hospital, where no findings of purpura were noted during the examination

COMMENT

Thrombopenic purpura developed in this patient following the administration of 25 gm of streptomycin No other drug definitely known to have a toxic effect on blood platelets was given to the patient A significant factor might have been the sensitization of the patient by the administration of 2 gm of streptomycin during April, 1947 Whether the two major operations performed on the patient on Oct 28, 1948, and Nov 15, 1948, made him more susceptible to the effect of streptomycin is conjectural It is interesting to note that the amount of streptomycin administered to the patient before purpura developed was relatively small In the cases reported by Feld, Deyke, and Wallace blood dyscrasia began to manifest itself after the administration of 70 to 80 gm of streptomycin The bone marrow findings were suggestive of an allergic type of purpura

SUMMARY

A case of thrombopenic purpura is reported in a patient affected with quiescent pulmonary tuberculosis and tuberculous empyema He was treated with decortication, a five-rib thoracoplasty, and 25 gm of streptomycin It is felt that this case of purpura hemorrhagica was most probably precipitated by the streptomycin

ADDENDUM

The patient was last seen at the Fort Wayne (Ind) Veterans Administration Hospital between Jan 22, 1951, and Feb 9, 1951 His general condition was very good Scattered bluish ecchymoses on both arms and legs with a few petechiae were noted The red blood cell count was 5,460,000, with a hemoglobin value of 15 gm The white blood cell count was 14,520, with 78% polymorphonuclear leukocytes and 20% lymphocytes The blood platelets numbered 94,000 The bleeding time was 15 minutes and the coagulation time (Lee-White) was 16 minutes There was only slight clot retraction at the end of five hours The prothrombin time was 18 seconds The Leeds-Rumpel phenomenon was positive

FIBRINOUS BRONCHITIS

REPORT OF CASE

John A Callahan, Boston

Fibrinous bronchitis has been recognized as a disease entity for many years, probably because of its outstanding characteristic, the expectoration of bronchial casts by the patient It was known to Galen, who considered the casts to be blood vessels expectorated from the lung It was not until 1750 that Bussiere established that the casts were bronchial secretions when he demonstrated a cast in situ at autopsy Lebert, in 1869, collected all the cases in the literature up to that time, a total of 44 cases Bettman collected 145 cases from 1869 to 1902 [1] Walker found 31 cases reported from 1900 to 1920 [2] Since 1920 there have been about 26 cases reported, bringing the total reported cases to between 180 and 200 It is the purpose of this report to record a case which presented some interesting features

REPORT OF A CASE*

A Negro woman, 54 was admitted to the Massachusetts Memorial Hospitals on Oct 16 1950 complaining of difficult breathing and cough productive of white branch like sputum of three months duration Three and one half years ago the patient had had an episode of chest pain which was aggravated by breathing and coughing and accompanied by fever These symptoms disappeared in a week or two but have returned since to a lesser degree, with upper respiratory infections Over a period of seven months she lost 80 to 100 lb (36 3 to 45 4 kg) and complained of dizziness and drenching night sweats Eight months prior to the present illness swelling and pain developed in the calf muscles of the left leg Nine days later she noted recurrence of left pleuritic chest pain and cough productive of white "ropy" sputum

On Feb 26 1950, she was admitted to another hospital with a diagnosis of pulmonary embolization and infarction (although there was no roentgenographic confirmation) deep thrombo phlebitis of the left leg bronchitis and possible broncho pneumonia

Three days after discharge she sustained a superficial injury with some bruising of the face and flank on the right side and the right leg She became dyspneic again and was readmitted to the same hospital on April 5, 1950 The changes in physical examination at this time included slight distension of the neck veins but no hepatojugular reflex The chest showed signs of diminished tactile and vocal fremitus with inspiratory crackling rales at the right base Pulmonic second sound was louder than aortic second sound, but the examination of the heart was otherwise unchanged There was tenderness of the right flank and ecchymosis of the right leg was present Laboratory data at this time revealed hemoglobin 10 Gm , leucocytes 8 600 and sedimentation rate 5 mm in one hour Two green reactions were obtained in tests of the urine for sugar Blood culture yielded no growth Gastric washings injected into a guinea pig in February were reported as negative for tuberculosis Electrocardiogram showed sinoauricular tachycardia and incomplete auriculoventricular block She was discharged on April 10 1950 improved with diagnoses of arteriosclerotic heart disease cardiac enlargement sinoauricular tachycardia early mild cardiac decompensation and possible diabetes mellitus

After discharge she felt weak had pains in her right chest and cough which was productive of a moderate amount of white

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Fourth year student Boston University School of Medicine

* From the Robert Dawson Evans Memorial Massachusetts Memorial Hospitals

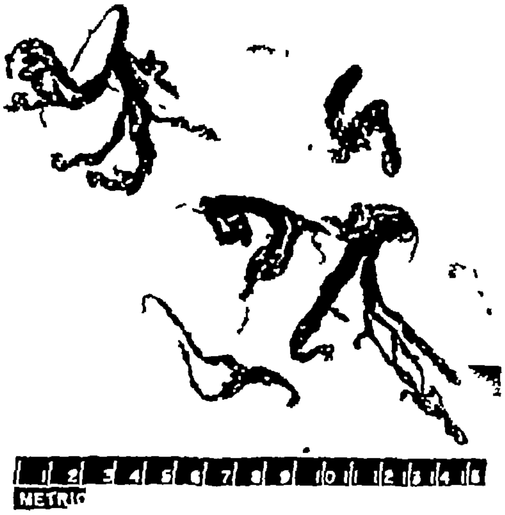
[1] Bettman M Report of a Case of Fibrinous Bronchitis with a Review of All Cases in the Literature Am J M Sc 123 [illegible] 1902

[2] Walker J C Two Cases of Fibrinous Bronchitis with a Review of the Literature Am J M Sc 150 825 1920

foamy sputum, but no hemoptysis These symptoms continued with no increase in severity and with few remissions until about three months before the present admission Early in August, 1950, she noted the onset of dyspnea severer than usual, wheezing localized to the right anterior superior portion of the chest, and violent coughing with blueness of the face After several minutes of coughing, she expectorated a 'white branch or tree like thing and felt much relieved After expectoration, she felt a hollowness in the right side of her chest She continued to have these episodes of dyspnea and cough productive of casts almost every day before admission She reported that she coughed up between four and six casts each day, that some of them were tipped with blood, and that they were most often expectorated shortly after waking in the morning or about midnight She was seen by the Home Medical Service of the Massachusetts Memorial Hospitals on Oct 12, 1950 and admitted to the hospital

Her past history was noncontributory Her family history revealed a half sister had died of tuberculosis 15 years ago, but the patient denies any but the most casual contact with her The patient s husband was said to have "a spot on the lung," but investigation in 1948 revealed pulmonary fibrosis and bronchiectasis, with guinea pig cultures negative for tuberculosis

The patient was an obese Negro woman she was able to sit up in bed, was breathing with some difficulty and coughing occasionally, but was in no acute distress Her temperature was 99 F pulse, 100 per minute respirations 25 and blood pressure 138/88 The skin showed no scaling eruptions, or abnormal pigmentation Examination of the head revealed no abnormalities A nontender lymph node, 1 cm, was palpable in the left jugulodigastric region The anteroposterior diameter of the chest was increased Respiratory expansion of the two sides of the chest was equal Respirations were deep and somewhat labored The apex impulse was not palpable The left border of cardiac dullness was 2 cm beyond the midclavicular line The rhythm was regular except for occasional extrasystolic beats A grade one systolic murmur was heard in the fourth intercostal space to the left of the sternum Pulmonic second sound was louder than aortic second sound There was prolongation of expiratory breath sounds slightly diminished resonance and moist rales over the lower third of the right chest posteriorly Diaphragmatic excursion was equal bilaterally 2 3 cm Vocal and tactile fremitus were unaltered Examination of the abdomen revealed an obese abdominal wall, one right upper quadrant and one midline hypogastric scar, vague tenderness but no spasm in the right upper quadrant, and no organs or masses palpable The anus was constricted and would not admit the examining finger Pelvic and neurologic examinations were normal The extremities showed 1 + pitting pretibial edema and a nontender thrombosed vein in the left calf posteriorly



Bronchial casts

Pathologic description of the casts was as follows Specimen consists of three 'bronchial casts (fixed in Zenker's solution) apparently having arisen from main stem bronchi and the primary division thereof (figure) Each cast measures approximately 4 cm in length and 1 0 to 0 4 cm in diameter Cross section reveals fine cystic structure Microscopic study indicates that sections of the casts are composed of mucus, fibrin albuminous precipitate, scattered cells (some well preserved and others degenerated and necrotic) and interspersed vacuoles representing entrapped air No bacterial colonies or tumor cells were noted.

On admission the hematocrit was 53 (Wintrobe) and the hemoglobin 17 Gm Other laboratory studies were normal, but the roentgenogram of the chest showed enlargement of the right auricle, atelectasis at the right base, pulmonary congestion, and a cardiac configuration consistent with a small pericardial effusion Shortly after admission the temperature became elevated to 103 4 F rectally, and she had dyspnea, tachycardia, and pain in the right shoulder At this time venous pressure was 220 mm (citrate), and arm to tongue circulation time was 38 seconds (dehydrocholic acid [decholin®])

On the second hospital day her cough diminished, although small casts were still being expectorated The blood pressure fell to 88/72, and the pulse rose to 110 The right border of cardiac dullness was found to be 5 cm to the right of the midsternal line The left border of cardiac dullness was 2 cm to the left of the point of maximal cardiac impulse There was no increase in venous distention and the lungs were clear to auscultation and percussion Fluoroscopy at this time revealed a small pericardial effusion The leucocyte count rose from 7,700 to 13 900, and the electrocardiogram showed a P R interval of 0 24 seconds and right ventricular strain

The patient became asymptomatic on the fourth hospital day and expectorated no more casts during her hospital stay Except for transient laryngitis, which responded quickly to symptomatic treatment, and temperature elevations every third or fourth day to 100 or 101 F, she remained asymptomatic

Results of acid fast studies by sputum smear throat smear smear of bronchoscopic specimen, and repeated gastric washings were negative An intradermal first strength purified protein derivative test was normal, while the result of second strength was strongly positive at 24 and 48 hours Repeated sputum cultures grew beta hemolytic Streptococcus alpha hemolytic Streptococcus, Hemophilus influenzae, Micrococcus pharyngis sicca Neisseria flava and Micrococcus catarrhalis and on one occasion Escherichia coli Corynebacterium diphtheriae was not seen After the initial rise, the leucocyte count returned to normal but revealed a progressively increasing eosinophilia reaching 17% on one occasion, which persisted until shortly before discharge The result of an intradermal test (Bachman) with trichina extract was negative Bronchoscopy was performed on the 14th hospital day No gross lesions or casts were seen All bronchial orifices were well visualized A small amount of thin colorless secretion was seen issuing from the right main stem bronchus Acid fast smears and results of Papanicolaou studies on this material were negative Vital capacity studies at regular intervals were consistently between 2 3 and 2 6 l Venous pressure toward the end of the hospital stay was 205 mm (citrate), and circulation time was 24 seconds (dehydrocholic acid) The patient was digitalized slowly and adjusted to a maintenance dose of digitoxin She was discharged asymptomatic, but febrile, on the 32nd hospital day

COMMENT

Fibrinous bronchitis is usually described as a rare disease but its true rarity is somewhat in doubt Walker, in 1920, knew of three unreported cases in addition to the two he reported, and suggested that "a more careful examination of the sputum of patients with bronchitis and the like, would probably result in a still greater yield of cases of fibrinous bronchitis" The casts are expectorated as white masses in the sputum, which when floated in water can be made to unravel and show their branched form They may be small portions of a larger cast or may

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[illegible] (a) [illegible] F T Diseases of the Bronchi Lungs and Pleura ed 2 [illegible] Lea & Febiger 1925 (b) West S Diseases of the Organs of Respiration London Griffin & Company Ltd 1902 be almost exact reproductions of the bronchial tree [3] They are composed of fibrin and mucin, and at one time they were classified according to the predominating substance This classification is no longer considered useful The casts may contain desquamated epithelial cells, bacteria, red blood cells on the surface although rarely in the substance, and, according to some authors, Charcot-Leyden crystals and eosinophils [4] The large portions of the cast may be hollow, although they usually are filled with mucus and do not admit air, while the smaller terminal portions are uniformly solid and may resemble Curschmann's spirals The bacteria that have been isolated from the casts include streptococci, staphylococci, pneumococci, Corynebacterium diphtheriae, Klebsiella pneumoniae Mycobacterium tuberculosis, and Hemophilus influenzae [5]

Walker expressed the opinion that fibrinous bronchitis should be considered a primary disease and that casts formed during the course of other diseases should be considered symptomatic of those diseases [2] Most authors believe, however, that primary and secondary forms exist and that acute and chronic courses are seen in both forms [6] It has been reported in association with other pulmonary diseases such as tuberculosis, asthma, bronchial compression due to tumor to aneurysm, to enlarged bronchial glands, fungus infection, chronic passive congestion or heart disease, pulmonary edema, and conditions after exposure to noxious inhalants such as live steam, smoke, and ammonia General constitutional disturbances with which it has been reported include typhoid fever, scarlet fever, smallpox, rheumatism, influenza, erysipelas, diphtheria, pemphigus, impetigo, and herpes zoster It is reported to be more frequent in males and commonest between the ages of 10 and 30 years

There is no specific etiology known Many different bacteria have been isolated, as mentioned before, but none of these has been found consistently Rakower believes that a constitutional predisposition exists and that the disease is produced by a precipitating factor such as bacterial infection or mechanical or physiochemical influences Weber [6f] observed a case in association with exophthalmic goiter which improved when the thyrotoxic disease did The disease has been compared to mucous colitis as an upset of the autonomic and endocrine systems Roth, reporting in 1938, felt the disease to be related to allergic reactions and histamine He treated one patient successfully with torantil[8] (a histaminase preparation) intramuscularly After the disappearance of symptoms, histamine was given subcutaneously, and relapse followed The relapse was treated successfully with torantil [8] This report is difficult to evaluate in the light of a report by Feinberg in 1946, which stated that all histaminase preparations available to the date of his publication were inactive in the treatment of allergic states or diseases in man [9] Keizer, in 1949 thought the disease resembled asthma and suggested the use of antihistaminic drugs for treatment, although he did not use them in his case [4a]

There are three cardinal symptoms of the disorder dyspnea, cough and expectoration of casts There is great variation in the severity of these symptoms from expectoration of casts after hawking to suffocating dyspnea and violent paroxysmal coughing In some cases the casts cannot be coughed up, and the patient dies of asphyxia There is usually some degree of fever which however is in no way characteristic Chills may precede the paroxysm of dyspnea, and hemoptysis of varying amount may follow Acute cases are usually marked by severe dyspnea and sometimes by deep cyanosis The severity of symptoms may depend on the extent of bronchial involvement The chronic form is much more frequent The expectoration of casts may occur at intervals over many years and during the periods of active disease one to ten casts may be produced daily [10]

The physical signs are not characteristic and the diagnosis must be made on the basis of casts found in the sputum [3b] Rales and diminution of breath sounds and resonance may be heard over an area where casts are forming Any type of rales may be heard, including one perhaps more characteristic than others, a rough, snapping, bronchial type believed to be caused by flapping of the ends of the casts in the bronchi and to which the French have given the name *bruit de drapeau* [11] Other physical signs due to associated disease or to complications such as bronchostenosis, focal or massive atelectasis may be observed [12] Chronic emphysema is often seen in cases of long standing Considerable loss of weight may occur without any other explanation Night sweats have been reported in cases in which no acid-fast infection could be demonstrated [1] Roentgenographic findings are also not specific They are increased hilar density and increased bronchovascular markings [13] Walker described mottling of the lung fields in one case [2]

Prognosis in cases other than those in which the patient dies of asphyxia is largely dependent on the associated diseases In uncomplicated, primary cases in which casts are expectorated periodically without great difficulty, the patient may live normally between paroxysms Many cases clear up completely without recurrence [14] Those acute cases resulting in death from asphyxia are relatively uncommon, although Johnstone reported one in 1945 [10c]

The treatment of this disease has been varied and has included inhalations of steam, calcium hydroxide solution (lime water) spray, dilute sodium hydroxide with calcium hydroxide solution, potassium iodide, mild mercurous chloride (calomel), lead acetate, sulfur, nitrous ether (sweet spirit of nitre), phlebotomy, ipecac, antimony and other emetic measures, sulfapyridine, penicillin, torantil,® manual compression of the chest during expiration, pneumothorax, bronchoscopic removal of the cast, and tracheotomy [15]

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[4] (*a*) Keizer D P R Bronchitis mucinosa fibrinosa Nederl tijdschr geneesk 93 3729 1949 (*b*) Mercia F W Acute Fibrinous Bronchitis with Massive Atelectasis Ohio M J 46 1079 1950 (*c*) West [3b]

[5] (*a*) Keizer [4] (*b*) Lord [3] (*c*) Meyer A Ueber Bronchitis fibrinosa acuta Klin Wchnschr 16:1126 1936 (*d*) West [3b]

[6] (*a*) Bettman [1] (*b*) Lord [3a] (*c*) Meyer [5c] (*d*) Mulligan P B and Spencer R D Chronic Fibrinous Bronchitis as a Symptom of Mediastinal Compression J A M A 82 791 (March 8) 1924 (*e*) Shover A F Fibrinous Bronchitis Brit M J 2 1035 1906 (*f*) Weber H Exophthalmic Goiter and Fibrinous Bronchitis Med Klin 17:1143 1921 abstracted J A M A 77 1932 (Sept 18) 1921 (*g*) West [3b]

[7] Rakower J Atelectasie massive au cours de la bronchite pseudo membraneuse primitive Presse med 46:1116 1938

[8] Roth O Zur Pathogenese und Behandlung der Bronchitis fibrinosa Klin Wchnschr 17 1798 1938

[9] Feinberg S M Histamine and Antihistaminic Agents Their Experimental and Therapeutic Status J A M A 132 702 (Nov 23) 1946

[10] (*a*) Bettman [1] (*b*) Huber J P Chevallier and Gerbay Angine à monocytes et trachéo-bronchite pseudo-membraneuse Ann otolaryng 65 784 1948 (*c*) Johnstone D F Acute Plastic Bronchitis (with Case Report) Guy's Hosp Gaz 59:2 1945 (*d*) Lawhead N R Acute Fibrinous Bronchitis Report of a Case J Michigan M Soc 20:14 1921 (*e*) Lord (*f*) Marshall W H Acute Fibrinous Bronchitis ibid 19 552 1920 (*g*) West

[11] Lord Marshall [10f] West

[12] (*a*) Malamud T and Lisman A Atelectasia aguda de un lobulo pulmonar en una Bronquitis pseudo membranosa frusta Prensa med argent, 33 2362 1946 (*b*) Mercia [4b] (*c*) Perlstein R S A Case of Fibrinous Bronchitis Complicated by Massive Atelectasis Am Rev Tuberc 22 82 1930 (*d*) Rakower [7]

[13] Rodenbaugh F H Fibrinous Bronchitis [illegible] 10 843 1923

[14] Bettman [1] Walker [2] West

SUMMARY

A case of fibrinous bronchitis is reported in a woman who had had thrombophlebitis of the deep calf veins and pulmonary infarction in the past The main features of the disease are reviewed, and attention is directed to the fact that this form of bronchitis is perhaps commoner than is generally supposed It is overlooked, because the sputum of patients with bronchitis is not always examined in such a way as to result in detection of the casts

80 E Concord St.

[15] Bettman[1] Christian H A Fibrinous Bronchitis M Clin North America 2 1255 1919 Huber[10b] Johnstone[10c] Kelzer[4a] Lawhead[10d] Lord[3a] Mercia[4b] Meyer[5c] Mulligan and Spencer[6d] Oliver T Remarks on Plastic or Croupous Bronchitis Brit. M J 2 69 1899 Roth[8] Seiler, S Ueber Bronchitis plastic (mit Mitteilung eines durch Kollapstherapie geheilten Falles) Schweiz. med Wchnschr 72 86 1942. Walker[3] Weber[6f] West.[3b]

RETICULUM CELL SARCOMA OF MESENTERY

CASE WITH PRONOUNCED FEBRILE MANIFESTATIONS

Bernard T Fein, M D , San Antonio, Tex
and
Benjamin L Schulman, M D , Pittsburgh

Jackson and Parker [1] found that pronounced fever was rare in reticulum cell sarcoma unless associated with sepsis Gall and Mallory [2] noted that fever of 101 F or higher occurred at some time during the course of the disease in all the malignant lymphomas, but was relatively uncommon in clasmatocytic (25%) and stem cell (29%) lymphomas

Gall and Mallory,[2] in offering a different classification of malignant lymphomas in a study of 618 cases divided the specimens into seven categories The "reticulum cell sarcomas" were divided into two types (1) stem cell lymphomas (tumors composed of highly undifferentiated, supposedly pluripotential cells, called stem cells) and (2) clasmatocytic lymphomas (tumors made up of fairly well differentiated cells, simulating normal clasmatocytes or monocytes, the cells being smaller than stem cells, but distinctly larger than lymphocytes) The other five categories of malignant lymphoma are (3) lymphoblastic lymphoma, (4) lymphocytic lymphoma, (5) Hodgkins lymphoma, (6) Hodgkins sarcoma, and (7) follicular lymphoma Other classifications have been given for malignant lymphomas [3] and reticulum cell sarcomas [4]

Gall and Mallory [2] studied a group of 70 initially localized malignant lymphomas, of which 32 were "reticulum cell sarcomas " Three of these were found in the abdominal lymph nodes, one being a stem cell lymphoma, its duration one to two years, and its ultimate distribution generalized Two were clasmatocytic lymphomas of the abdominal lymph nodes The first was of 0 5 years' duration, the ultimate distribution generalized, the diagnosis being made at autopsy, the other was of 1 1 years' duration, and the ultimate distribution local Of the three cases, only one was of local ultimate distribution Edling [4b] found that a marked characteristic of reticulum cell sarcomas was their pronounced tendency to become generalized

The purpose of this report is to record a case of reticulum cell sarcoma of the mesentery, in which high septic fever was a pronounced manifestation, and whose ultimate distribution was apparently local

REPORT OF A CASE

An Oriental Moslem man, age 35, was admitted to the hospital on Aug 31, 1948, with a chief complaint of fever The present acute illness had started approximately two months prior to admission At that time, symptoms were anorexia, nausea, and mild diarrhea The patient was treated by his physician, with complete abatement of symptoms in a few days Two weeks prior to admission he developed a fever of 101 F , complained of sore throat, which on examination by his physician was reported as injected At that time, he was given sulfathiazole then he received intramuscularly 300,000 units of penicillin daily In spite of the treatment, the temperature was 100 6 F rising to 103 F on the evening of admission He complained of being hot and weak He had no pain, and there was no apparent weight loss or gastrointestinal complaints

The past history disclosed the following During childhood, while in India, an incision and drainage of the glands on the right side of the neck had been done There were no complications resulting He had no other operations or illnesses prior to the onset of his present illness He had no previous gastrointestinal disease or fever He denied syphilis malaria, and all diseases endemic to his native country India

When seen for the first time, he was acutely ill and weak The temperature was 100 6 F , pulse 108, respirations 22 per minute, and blood pressure 102 systolic and 70 diastolic (mm Hg) Slight pallor of the lips was noted, and there was no apparent weight loss Examination of the head was normal The eye grounds showed no exudates, hemorrhage, or papilledema The conjunctivae showed no icterus The ears and nose were not remarkable The teeth were normal, as was the throat There was a small healed scar over the right side of the neck in the area of the anterior cervical glands The anterior and posterior cervical glands were not tender or palpable The lungs were resonant to percussion and no rales were found The heart tones were of good quality, and a sinus tachycardia was present

The abdomen, which was not distended or rigid, was tympanitic on percussion and normal on auscultation The liver, spleen, and kidneys were not tender or palpable A mass about orange size was palpable just to the left of the umbilicus The mass was firm, round and neither tender nor movable There was no pulsation felt or abnormal sound heard The genitalia were normal The extremities were warm, the pulses were easily palpable The axillary and inguinal glands were not tender or palpable Rectal examination was normal

The urinalysis at the time of admission revealed no significant abnormalities The red blood count was 3,950,000, hemoglobin 11 Gm , the white blood count 12,050, a differential count showed neutrophils 65%, lymphocytes 32% eosinophils 2%, and basophils 1% A roentgenogram of the patient's chest was

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Dr W J Winter Assistant Chief of the Pathology Service Veterans Administration Hospital Aspinwall Pa gave suggestions and advice

[1] Jackson H Jr , and Parker F Jr Hodgkins Disease and Allied Disorders New York, Oxford University Press, 1947 pp 113 132.

[2] Gall E A and Mallory T B Malignant Lymphoma A Clinico-Pathological Survey of 618 Cases Am J Path 18 381 1942

[3] Callender G R. Tumors and Tumor like Conditions of, the Lymphocyte the Myelocyte the Erythrocyte and the Reticulum Cell Am J Path 10: 443 1934

[4] (*a*) Warren S and Picena J P Reticulum Cell Sarcoma of Lymph Nodes Am J. Path 17 385 1941 (*b*) Edling L. Contribution to the Pathology and Clinical Picture of Reticulum-Cell Sarcoma Radiology 30 19 1938

reported as follows The heart and great vessels are normal The apices are clear, there is no pleural effusion The hilar glands are increased in size There is no evidence of tuberculosis The electrocardiogram on admission revealed a sinus tachycardia rate 120 A blood smear was taken for malaria, and agglutination tests were performed with typhoid O and H antigens, paratyphoid A and B, Proteus O X_{19}, and Brucella abortus

Penicillin was administered intramuscularly, 300,000 units twice daily, and quinine sulfate 0 33 Gm was given orally four times daily as the temperature began to rise

On the second hospital day the temperature was 100 F the patient had no complaints other than those of fever and weakness He continued to have daily elevations of temperature in spite of the treatment he was receiving (fig 1) On the fifth hospital day, intramuscular administration of penicillin and quinine sulfate taken orally were discontinued The patient was given sodium sulfathiazole, 4 Gm at the start and 1 Gm every four hours A blood cell count done at this time showed red blood cells 3 430,000, hemoglobin 9 3 Gm , and white blood cells 9,500 Differential count showed neutrophils 85% lymphocytes 13% eosinophils 1% and basophiles 1% Urine was normal A malaria smear showed no plasmodia A throat smear was negative Sputum cultures for tubercle bacilli were negative Stool examinations revealed no ova or cysts Agglutination tests with typhoid O and H antigens paratyphoid A and B Proteus O X_{19}, and Brucella abortus gave negative results Heterophil antibody titer was 1 7 A blood culture taken on the first hospital day showed no growth The result of the spinal fluid Kolmer test was negative There was no increase in pressure cells sugar, or protein A roentgenogram of the patient s chest was reported as follows Since the last examination there has been no change in the appearance of the hilar glands An area of right hilar density may represent a small area of pneumonic consolidation or could represent enlarged hilar glands There is no evidence of tuberculosis

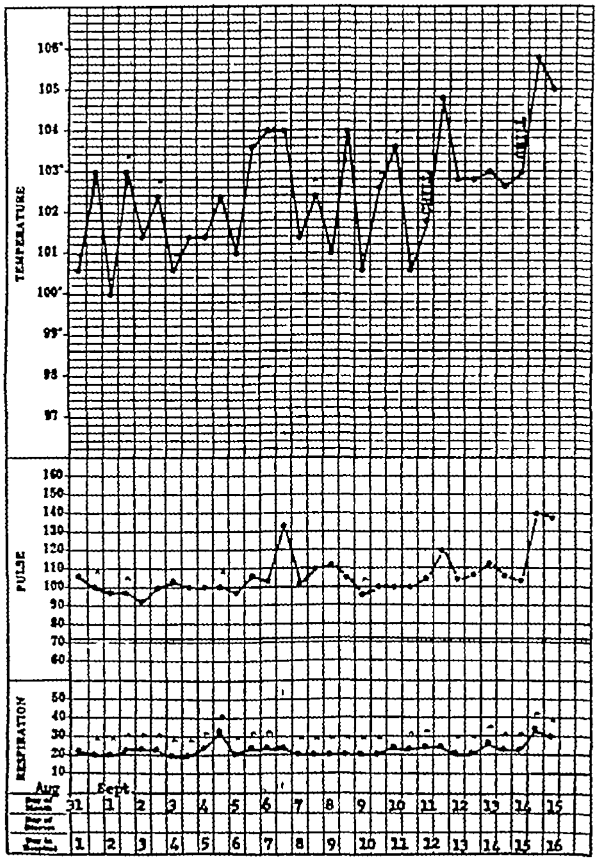

Fig. 1 —Temperature curve showing pronounced fever

On the ninth hospital day the temperature was 101 F., and the patient felt improved A pallor developed and weakness continued That evening the temperature rose to 104 F , dropping the next morning to 100 6 F On the eleventh hospital day the temperature was 103 8 F , and the patient refused to eat He had anorexia but no vomiting. On the twelfth hospital day, the patient had a chill, and temperature rose to 104 8 F The following day the temperature returned to 102.8 F A malarial smear taken was negative for plasmodia On reexamination of the abdomen, the liver and spleen were not tender or palpable The mass remained the same size, was firm and round and had become tender on pressure It was slightly movable There was no distention and normal peristalsis was present. The patient had had a bowel movement daily except on the eighth hospital day A transfusion of 500 cc of whole blood was given Because of the spiking nature of the temperature the possibility of an inflammatory involvement of the mass was considered Surgical consultation indicated a laparotomy essential

On the fourteenth hospital day the temperature remained at 102 8 F The patient was started on streptomycin, 0 25 Gm every six hours He was given 500 cc whole blood and parenteral fluids On the fifteenth hospital day a laprotomy was performed A large tumor infiltrating the mesentery of the small intestine was found A few retroperitoneal nodes were enlarged, the liver and spleen were not enlarged The large mesenteric tumor associated with considerable suppuration, necessitated removal of 31 inches (78 74 cm) of small intestine Immediately postoperatively the patient s temperature was 103 F He was given a transfusion of 500 cc whole blood and parenteral fluids On the evening of the fifteenth hospital day, the temperature began to rise, and the patient had a severe chill The temperature rose to 105 8 F dropping to 105 F on the sixteenth day (fig 1) The patient became cold and clammy, the pulse weak, and he died at 12 45 a m of the sixteenth hospital day An autopsy was not performed

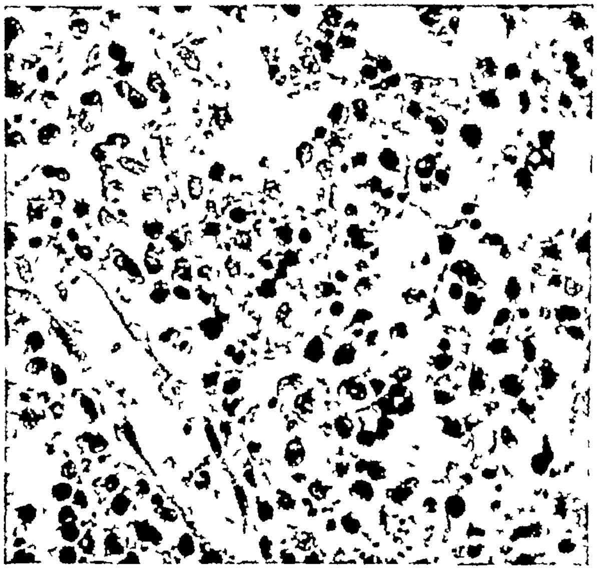

Fig 2 —Photomicrograph of the mesenteric tumor clasmatocytic lymphoma The nuclei exhibit a pronounced degree of variation and are eccentric (× 275)

Gross description was as follows Eighty two cm of small bowel with mesentery attached is 32 mm in average diameter The mesentery is altered by pronounced thickening near the base which averages 3 5 cm *Four other pieces of mesentery received* separately measure from 3 to 12 cm across The thickened portion consists of smooth glistening, grayish white tissue extensively infiltrating and replacing the adipose tissue Localized hemorrhagic nodules about 1 cm across are present in the subserosal portion. Discrete lymph nodes are not present in the mass which has obliterated everything in the periphery of the mass A very occasional fatty and hemorrhagic nodule is observed The resected portion of the bowel has an unaltered wall and a pale intact mucosa having circular folds characteristic of the lower jejunum The lumen contains brownish black material resembling the bowel content of a patient receiving iron medication

Microscopic description revealed the following Sections of the mesenteric lymph nodes are completely replaced by a poorly differentiated tumor composed of cells that are irregular in outline (fig 2) The cells are approximately 14 to 24 μ in diameter The cytoplasm is more abundant than is usually seen in the stem cell type The nuclei are eccentric in position, some being round, oval, or horseshoe-shaped A fine network of chromatin is present The cells are supported on fine reticulum strands Regions of necrosis are common, and growth adjacent to blood vessels is pronounced Infiltration of the nerve trunks is marked on many of the sections

SUMMARY

A case of reticulum cell sarcoma of the mesentery causing pronounced febrile manifestations is presented The tumor was apparently localized to the abdominal lymph nodes, as no generalized involvement was found It is suggested that the mesenteric lymph nodes are the causative site of origin of the tumor in this case

Woodlawn Medical Center (Dr Fein)

IMPROVED ANESTHESIA SCREEN

Frank Cole, M D , Lincoln, Neb

The usual anesthesia screen is almost without exception straight, that is, it consists of three sides of a rectangle This is certainly the simplest and the most stable design, the result is the erection, some 20 in above the operating table, of a rigid bar having the appearance of a straight line The surgeon, who almost invariably places an assistant between himself and the anesthetist, desires that this bar be moved as far cephalad as possible The anesthetist, who is at a loss to understand why even the patient's head must disappear from his view and reach during abdominal surgery, hopes to locate the screen as far caudad as possible The result is that the screen generally is placed directly over the patient's eyes, it is often pushed back after the operation has been started

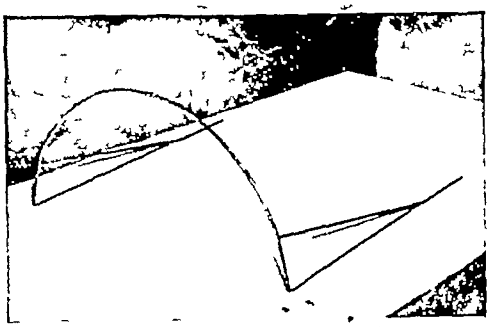

Fig 1 —Semicircular anesthesia screen

It is the surgeon's arm and elbow and those of his assistant that require room at the head of the table, this room is needed only laterally The anesthetist is anxious to be able to see and to reach the patient's head for change of position, suctioning, or tracheal intubation, the space he demands is located toward the midline of the table With these two facts in mind, a new and better shape for the old "ether screen" becomes apparent, one in which the top horizontal bar has the contour, not of a straight line, but of either a curve, such as a semicircle, or two straight lines forming an angle With this newer design, there will be room for the assistant's elbows at the side, while the anesthetist may have exposed for him the patient's entire head

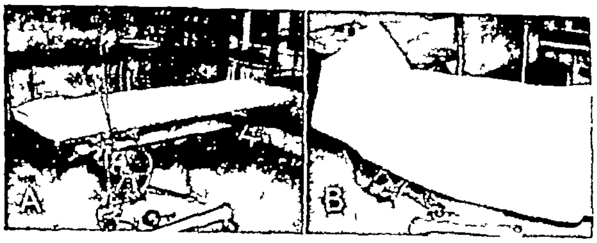

Fig 2 —Improved screen attached to operating table (*A*) and with draping (*B*)

A semicircular screen has been constructed and has proved satisfactory in actual use Draping is no more difficult than with the conventional anesthesia screen The patient's entire head has been accessible to the anesthetist without his being required to reach under the drapes In performance of laryngoscopy, the screen no longer impinges on the handle of the laryngoscope Surgical assistants have been pleased to find as much room for their elbows as they could want

The screen is shown in the accompanying illustrations (figs 1, 2, and 3) It is obviously adjustable to any desired height, can be moved cephalad or caudad, and can be rotated as easily as the conventional screen (fig 3*A*) It affords the assistant a greater degree of comfort, in that the corner no longer impinges on his arm Since the new screen faces him in every position, it is no longer possible or necessary for the assistant to contaminate himself by having his elbow, upper arm, or shoulder behind the sterile screen while holding a retractor

Fig 3 —Anesthesia screen during operation.

Veterans Administration Hospital

Chief Department of Anesthesiology, United States Veterans Administration Hospital

Reviewed by the Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

ARM REST FOR THE SURGICAL ASSISTANT

Frank Cole, M D , Lincoln, Neb

The surgical assistant's practice of resting his forearm on the patient's chest has long been a source of contention between him and the anesthetist It is not denied that he does want some means of support, it is indeed wearying to hold one's hand in a single position without rest for hours, particularly while holding a retractor On the other hand, the anesthetist's objection is not without justification The fact that the assistant's task is tiring does not warrant his transferring his burden to the patient, whose chest cannot be looked on as an inert and insensitive object I have heard more than one patient under spinal anesthesia complain of the weight of the assistant's arm Surely it requires a considerable effort for a patient, conscious or unconscious, to lift an assistant's forearm with each inspiration In addition, heavy drapes, numerous instruments, and even the patient's own stomach have been found resting on his chest All this must necessarily be reflected in his respiratory and circulatory patterns and often denies him a good anesthesia

The weight imposed on the defenseless patient, which he is thus required to lift about 24 times each minute, was estimated by weighing my own forearm under simulated operating room conditions and was found to be 5 lb My hand, as nearly as I could judge, weighed 3 lb , and my hand and wrist weighed 3½ lb When the hand resting on the patient's chest is at the same time pulling on a retractor, the force the patient is required to overcome during inhalation may be considerably more than this

Lifting five pounds a vertical distance of one-half inch 24 times a minute amounts to a work output of 300 foot pounds per hour, a tremendous load to be inflicted on the respiratory muscles of an unconscious patient, in whom the effect is not merely fatigue but dyspnea During the course of a major surgical procedure, this may amount to an energy expenditure of more than 1,000 foot pounds For two tired assistants one on either side of the table, these figures must of course be doubled All this may easily be regarded as a form of respiratory obstruction

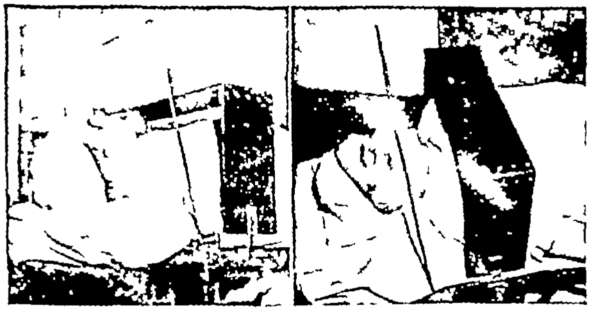

Fig 1—Photographs showing arm rest for surgical assistant.

I have constructed a device that will provide a rest for the assistant's arm and will allow the patient to breathe effortlessly (figs 1 and 2) In addition, it may be used as a second instrument tray The device has proved satisfactory in actual use It has always been possible to obtain free space between the patient's chest in maximal inspiration and the arm rest draping has not been more difficult All surgical assistants who have tried it have been delighted with it The device has been built in two forms Both are easily adjustable to any height and to any position between the patient's shoulders and abdomen

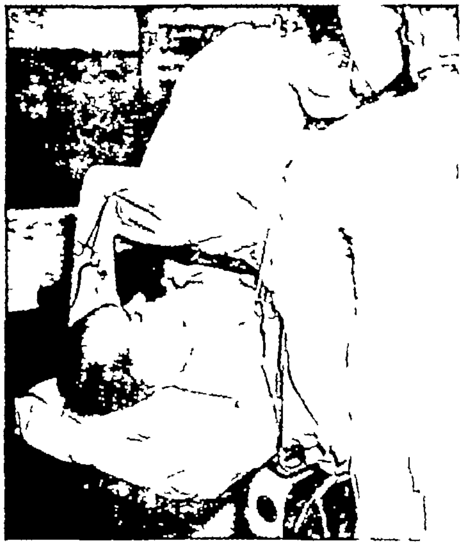

Fig 2.—Photograph of arm rest in operating room

Veterans Administration Hospital

Chief Department of Anesthesiology U S Veterans Administration Hospital

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration

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Shortcoming in the Hospital Routine.—Generally speaking, the thing most desired by the newly puerperal woman is rest Indeed, unless there have been complications this is likely to be her greatest need Yet what does she get? She may obtain a good night's rest with the many benefits resulting from refreshing sleep, but then again she may not Frequently those who cannot afford a private room—and they are in the majority—are returned to a ward or semiprivate area where others are in the process of rising Sleep and rest therefore even with the aid of sedation, is brief and fitful There is no prolonged refreshing slumber, nor is there likely to be for whether the patient is in a ward or private room, her presence in a hospital today appears to be a matter of secondary importance Secondary to obsolete but fixed hospital routine, secondary to the schedules of ward helpers orderlies nurses and doctors At some absurd hour she is awakened The technic used for this cruel procedure will, of course, vary It may be a thermometer inserted into her mouth a pitcher of ice water placed on her table or instructions to get washed and ready for breakfast, which commonly arrives an hour or two later Any attempt to snatch a brief rest during the remainder of the day is likely to be interrupted by the vips very important people such as her baby the cleaning woman the nurse the doctor and others I do not mean to be facetious in thus commenting upon the difficulty of obtaining rest in a hospital I seriously believe this has become one of the most important and not too well recognized bugaboo of hospital life I believe it is an important factor in contributing to the emotional upset and tears so frequently noted amongst puerperal women Too often it marks the beginning of the well recognized fatigue syndrome so commonly observed in new mothers — Norman F Miller Shortcomings in Puerperal Care *The Journal of the Iowa State Medical Society* July 1951

MYASTHENIA GRAVIS IN A MOTHER AND HER NEWBORN SON

George E McKeever, M D , Detroit

Myasthenia gravis is a disease that lends itself well to study The history and physical findings are well defined, although variable Almost absolute proof of the diagnosis is available in the test dose of neostigmine (prostigmin®) As a result, many articles are to be found in the recent literature Numerous series of cases have been available for the study of such particular manifestations of the disease as the ocular and the bulbar Certain aspects, however, are sufficiently rare to warrant case reports Among these are cases of myasthenia gravis complicating pregnancy and congenital myasthenia gravis Of the latter, a total of 10 cases has been reported, the first in 1942 [1a] Of the 10 cases, the congenital nature of the disease was determined by retrospect in four In the other six cases the diagnosis was made in the neonatal period In this report the seventh known case of myasthenia gravis occurring in a newborn child of a myasthenic mother is described

REPORT OF CASES

Case 1 —The mother Mrs L. B a 32-year-old Negro graduate nurse entered Harper Hospital Dec 11, 1949 complaining of weakness and weight loss associated with pregnancy The patient had been well until August 1948, when she noticed that she was unable to squeeze clothespins when hanging up clothes In November 1948, she observed that she could not fasten the buttons on her nursing uniform or tie her shoestrings The disability was intermittent and variable from day to day She could not manipulate her fingers in the morning when coming on duty, but after being on duty and busy she had no difficulty She was unable to carve meat because of 'stiffness of the fingers In January, 1949 the patient was, for the first time, unable to raise her hands to comb her hair Early in March, 1949, she experienced weakness of the right leg while attempting to board a bus, it was of such severity that she was unable to climb all the steps into the bus She backed off the steps and went to the emergency room of a local hospital where she was seen in the neurosurgical department No diagnosis was made other than a definite weakness of the right leg After this examination the patient developed blurring of vision She was admitted to the above-mentioned hospital on the neurosurgical service After being studied for seven days she was discharged with no definite diagnosis, multiple sclerosis was suspected The patient stated that she was helped by the bed rest She returned to her occupation as a nurse during the first week in April 1949 She was able to work until May, 1949, when the weakness of the right leg and blurring of vision recurred She then consulted a private physician, whom she saw weekly during the months of May and June In the latter part of June, 1949 she consulted her obstetrician because of suspected pregnancy The diagnosis of pregnancy was confirmed The last menstrual period was given as June 15, 1949 She had some nausea and vomiting of pregnancy during June Physical examination was within normal limits except for the presence of multiple large and small uterine myomas The date of confinement was estimated to be Feb 22, 1950, because of the size of the uterus The obstetrician was unaware of the complaint of weakness because it had disappeared She remained at her job until Aug 21, when she resigned because of abdominal pain that caused her to go to bed for one week The cause of the pain is unknown The patient continued to be free from weakness until the third week in November, 1949 the sixth month of pregnancy, when she noticed gradual loss of strength, had difficulty in climbing stairs and ptosis of the left eyelid and diplopia developed She became progressively weaker, with loss of appetite and weight Chewing became difficult No dysphagia was noted. During December the generalized weakness increased until the time of admission, Dec 11, 1949

Past History —The patient was one of seven month premature fraternal twins She had come to Detroit with her family in 1926 from her place of birth, Port Limén Costa Rica She had always been healthy The mother and father were both alive and well The twin brother was well and on active duty with the navy One brother had died at the age of 6 years of pneumonia There was no history of weakness in any member of the family

Physical Examination —The patient was a thin Negro woman appearing lethargic and chronically ill There was slight ptosis of the left upper eyelid The extraocular movements were normal No pallor of the optic disks was noted There was a perforation of the left tympanic membrane, with evidence of chronic otitis media The mouth was normal except for copious amounts of a thick mucoid saliva The patient was unable to swallow or expectorate the saliva which drooled from her open mouth The chest was normal except for evidence of weight loss The lungs were clear to percussion and auscultation The breasts were normal and full The heart was of normal size, rate 90 rhythm regular A faint systolic murmur was heard over the pulmonic area Abdominal examination disclosed an enlargement of the uterus compatible with a six and one half month pregnancy Multiple uterine myomas were readily palpable through the abdominal wall The extremities were normal except for evidence of weight loss Neurological examination elicited normal findings in all respects except for generalized weakness and ptosis of the left eyelid The weakness was so severe that she was unable to hold up her head The hand grip was almost imperceptible Inability to swallow was manifested by the copious salivary secretions that had to be wiped away from the tongue frequently The face was masklike and sad The patient was mentally clear

Laboratory Data—The red blood cell count was 3 950,000 per cubic millimeter and the hemoglobin was 10 7 gm or 70% Leukocytes numbered 9,700 per cubic millimeter, of which 80% were neutrophils, and 20% lymphocytes Urinalysis and Kahn s test elicited normal findings Blood type was B Rh negative Fasting blood sugar was 075 gm per 100 cc Nonprotein nitrogen was 21 mg per 100 cc.

Diagnosis—A diagnosis of myasthenia gravis was suggested and the patient was given 1 mg neostigmine methylsulfate intramuscularly Within 15 min there was a spectacular improvement in strength of facial expression and ability to swallow The hand grip was notably stronger There was also an increase in general strength and sense of well being The diagnosis of myasthenia gravis was established

Hospital Course—The patient was started on intramuscular neostigmine methylsulfate, 1 mg before meals supplemented by 15 mg of neostigmine bromide as soon as she was able to swallow in response to the intramuscular neostigmine By Dec. 22, the 12th hospital day she had gone into a spontaneous remission and was subsequently carried on a dose of 15 mg. neostigmine bromide three times daily by mouth There were minor variations in the daily dose The maximum was 5 tablets, and the minimum was 1 tablet Because of anemia and debility, the patient was given multiple blood transfusions. Her appetite, strength, and general condition improved steadily, and she had gained 21 lb (9 5 kg) by the time of delivery

On Feb 19, 1950, loss of muscular strength was noted This was especially severe in the muscles of the jaw, manifested by inability to chew food The relapse persisted for three days On Feb 22 1950, there was an increase in strength and general sense of well being At noon the patient began to have half minute labor pains every three minutes She was transferred to the obstetrical floor, where vaginal examination disclosed an

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From the Medical Department Harper Hospital

[1] (a) Strickroot F L Schaeffer R L and Bergo H L Myasthenia Gravis Occurring in an Infant Born of a Myasthenic Mother J A M A 120 1207 (Dec 12) 1942 (b) Wilson A and Stoner H B Myasthenia Gravis A Consideration of Its Causation in a Study of 14 Cases Quart J Med 13 1 1944

occiput posterior position of the fetus A moderate amount of vaginal bleeding had been observed It had been originally planned to deliver the infant from below In view however, of the posterior position of the fetus, the vaginal bleeding, the age of the patient and her primiparity, and the presence of multiple large uterine myomas a decision was made to deliver the baby by Porro cesarean section Under spinal anesthesia, the patient was delivered of a 6-lb 10-oz (3 kg) male infant by Porro cesarean section at 8 30 p m, Feb 22, 1950 The operation was performed without incident The patient's condition remained good until 7 30 a m Feb 23, when the pulse became imperceptible, the blood pressure unobtainable, and perspiration profuse The veins were collapsed A venesection was performed, and the patient was given 1,000 cc whole blood and 2 000 cc of dextrose in water She had been anuric By 1 30 p m she was out of shock During the period of shock, there was no evidence of muscular weakness The patient received only 1 tablet of neostigmine bromide on Feb 23 On Feb 24 she began to have fever up to 100 4 F With this elevation in temperature the patient developed ptosis of the left eyelid and weakness of the jaw muscles She showed no weakness on Feb 25, and was strong until Feb 27 when she developed a chill with fever up to 101 3 F Dysphagia was noted, but no other weakness On March 1 profound generalized weakness developed in the patient which closely resembled that present on admission 12 weeks previously Her total neostigmine intake on March 1 was 120 mg of the bromide and 2 5 mg of the methylsulfate Weakness persisted until March 3, when the temperature became normal She again appeared well and strong, and remained so until discharge March 18, 1950 Neostigmine was stopped after the morning tablet on March 12

Follow up Observations—Since discharge the patient has required neostigmine She was well controlled on 4 tablets of neostigmine bromide daily when last seen on June 20, 1950 On this dose she is able to perform the usual duties of a house wife

The outstanding features of the case of myasthenia gravis in the mother are the following (1) the unusual initial symptomatology of the patient had allowed the disease to go undetected for 16 months, (2) the patient experienced a remission during the first five months of pregnancy, (3) a relapse occurred during the sixth month of pregnancy, (4) a remission occurred on the day of delivery, (5) a relapse followed the delivery, and in turn was followed by a remission, (6) the baby was delivered by cesarean section for reasons not related to the myasthenia gravis

Case 2—The infant at birth was normal, with a vigorous cry Signs of myasthenia were particularly sought for because of previously reported cases On Feb 23 twenty two hours after birth, the baby was observed to have a weak cry and masklike facies He did not use the facial muscles to any extent when crying He was generally inactive and nursed poorly, part of the formula being regurgitated through the nose No improvement occurred during the next two days Accordingly on Feb 25 at 2 p m the baby was given 1 mg neostigmine bromide in water by mouth Part of the mixture was regurgitated After 20 min the baby was again appraised The cry was more vigorous, and more facial expression was used in crying He nursed better than during previous feedings The test was interpreted as being suggestive but not diagnostic The baby was given 1 mg of neostigmine bromide by mouth one-half hour before each feeding While on this regimen, he did well

On Feb 26 the neostigmine was discontinued after the 9 45 a m dose The baby did well until 2 a m Feb 27, when marked weakness was noted, the face was again sad and masklike the sucking power poor, and the cry feeble and expressionless At 9 30 a m the baby was given 2 5 mg neostigmine bromide in water by mouth Within 25 min there was a dramatic change in the facies The face had a more intelligent appearance The cry was vigorous and sustained, reaching a higher pitch than had been previously attained There was an increase in general activity Feeding was taken easily The succeeding three feedings were taken well without further neostigmine

At 11 45 p m Feb 27, 14 hr after the last dose of neostigmine, the infant was again found to be lethargic, with a weak and shallow cry The face was apathetic, expressionless and drooped Arms and legs moved only occasionally Vigorous stimulation produced a minimal response Two milligrams of neostigmine bromide in water was given by mouth Within 20 min there had been a progressive increase in activity, which included raising of the eyebrows, increase in the width of the palpebral fissures, and active, continued movement of the arms and legs The face became expressive and intelligent The lips were formed, and the cry was decidedly more vigorous He took 2 fluid ounces (60 cc) of formula with vigor and even collapsed the nipple The change provoked by neostigmine was dramatic A diagnosis of myasthenia gravis was made

The baby was given 1 mg of neostigmine bromide in water 15 min before each feeding In the days that followed, the facial appearance was strikingly more expressive than before neostigmine was started On March 3 the neostigmine dosage was reduced to 1 mg before every other feeding On March 8 at the age of 15 days, neostigmine was discontinued The baby remained well No further weakness had been observed The baby was well when last seen at age 4 mo

The outstanding features of the case of myasthenia gravis in the baby are the following (1) the baby was normal at birth, (2) the symptoms of myasthenia developed gradually from birth so that they were clearly recognized by the second day of life, (3) the diagnosis was easily proved by oral administration of neostigmine bromide, (4) the baby required no neostigmine after 15 days of life

COMMENT

The course of the mother's disease during her pregnancy does not coincide exactly with any single previously reported case of myasthenia gravis complicated by pregnancy This is in keeping with the nature of the disease, its course is unpredictable This is especially true during pregnancy It is the consensus of other authors that the management of pregnancy and labor in cases of myasthenia gravis should be governed by the same principles as govern nonmyasthenic cases It was suggested by Adam that purely obstetrical complications would occur from time to time that would demand cesarean section[2] The case described above presented such complications

The case of the baby is the seventh case of myasthenia gravis recognized in the neonatal period The clinical pictures presented by the seven cases are strikingly similar All seven infants were born of myasthenic mothers The symptoms were manifest in all by the third day of life Two of the babies died[1] The diagnosis was confirmed in five cases by response to neostigmine One infant was well in five weeks[1] In the case presented and one other[3] the patients were well at the end of two weeks A fourth was well at the end of four months but still taking neostigmine[4] The need for continued neostigmine in this case was not proved An infant observed by Ford, cited by Levin,[5a] was well at the end of one week

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[2] Adam G S Myasthenia Gravis and Pregnancy J Obst & Gynaec Brit Emp 53 557 1946

[3] Stone C T and Rider J A Treatment of Myasthenia Gravis, J A M A 111 107 (Sept 10) 1949

[4] laBranche H G and Jefferson R N Congenital Myasthenia Gravis, J [illegible]

Four cases of congenital myasthenia gravis have been described in the literature,[5] the congenital nature being determined in retrospect The parents of these infants were not myasthenic These cases seem to fit more closely the classical picture of myasthenia gravis as it is seen in the adult

Levin suggests that the term "neonatal myasthenia gravis" be used to describe the transient asthenia seen occasionally in newborn babies of myasthenic mothers [5a] The term "congenital myasthenia gravis" would be reserved for the persistent form of the disease The distinctive terminology would seem warranted in view of the two distinct clinical courses

The transient nature of myasthenia in neonatal cases should not cause the clinician to consider the problem lightly The two deaths reported in this group speak for the seriousness of the disease, in spite of its brief duration

The cause of myasthenia gravis is unknown It is known that acetylcholine is an essential agent for the transmission of nerve impulses across the synapses This agent is normally hydrolyzed by cholinesterase In myasthenia gravis there exists an excess of cholinesterase with a resulting deficiency of acetylcholine action Neostigmine acts by temporarily inactivating cholinesterase The mechanism of the transient myasthenia in the case of the baby described and others is a matter of conjecture It is certainly related to the mother's illness It could be postulated that there exists an increase of cholinesterase in the infant This could be a reflection of an increased circulating cholinesterase in the mother There is a possibility that an increase in circulating cholinesterase developed in the baby in response to the neostigmine medication administered to the mother The latter possibility seems more likely, since the baby was well at birth and the symptoms of myasthenia developed in progressive severity several hours after birth If the increased cholinesterase of the baby were only a reflection of the increased cholinesterase of the mother, it would be expected that the myasthenia would be severest at birth and show progressive improvement No case of myasthenia gravis in infancy had been observed prior to the introduction of neostigmine (prostigmin®) in 1935

15880 Green Lawn

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[5] (a) Levin P M Congenital Myasthenia Gravis in Siblings Arch Neurol & Psychiat. **62** 745 (Dec) 1949 (b) Bowman J R Myasthenia Gravis in Young Children J Pediat. **1**: 472 1948 (c) Keynes G The Results of Thymectomy in Myasthenia Gravis Brit M J **2** 611 1949

Blood Cholesterol in Thyroid Disorders—Blood cholesterol determinations are of great value in the diagnosis of hypothyroidism, since the range of upward increase in blood cholesterol in hypothyroidism is so wide, up to 800 to 1 000 mg per 100 cc Not only is blood cholesterol determination of value in the diagnosis of hypothyroidism, but it is of equal value in checking minus metabolic rates as an indication of the degree of myxedema or hypothyroidism which is present On the other hand, the downward range of blood cholesterol from normal (160 to 225 mg per 100 cc) is of such limited extent in patients with hyperthyroidism that it has little value in corroborating the clinical diagnosis of the latter —Frank H Lahey, M D, Progress in the Diagnosis and Treatment of *Hyperthyroidism, The Surgical Clinics of North America* June, 1951

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT OF THE COUNCIL

The Council has authorized publication of the following report

R T Stormont, M D, *Secretary*

PYRIDOXINE HYDROCHLORIDE (VITAMIN B_6)

A STATUS REPORT

Synthesis of vitamin B_6 was accomplished in *1939* [1] and the pure substance available as pyridoxine hydrochloride has been used extensively since that time in clinical trials and in studies of its function in the metabolic processes of animals and bacteria The vitamin occurs in animal tissues and in other natural source materials, as the compounds pyridoxine, pyridoxal, and pyridoxamine The term vitamin B_6" can include any of the *three compounds It has been established* [2] that pyridoxal phosphate is the coenzyme for transaminase and tyrosine decarboxylase enzymes that are involved in the interconversion of amino acids and hydroxy acids Thus the function of vitamin B_6 is related primarily to the metabolism of proteins

It has been shown that the vitamin is required in the nutrition of all species of animals studied thus far, including the rat, mouse, dog, monkey, chicken, pig, and calf The vitamin is essential for growth of the young and protracted deficiency results in acrodynia, edema, muscular weakness,[3] and convulsive seizures of an epileptoid type [4] Microcytic anemia has been observed in dogs [5] fed a pyridoxine-deficient diet, and characteristic neurologic changes in addition to the characteristic anemia have been described in the pig.[6] A recent report [7] describes arteriosclerotic lesions in the monkey after 5½ to 16 months on a pyridoxine deficient diet. Characteristic excretion of xanthurenic acid, an intermediary metabolite of tryptophane metabolism, indicating a deranged protein metabolism, has been noted by several workers [8] Although quantitative requirements of animals are not well established, it has been shown that the amount needed by the mouse is dependent to some extent on the protein level of the diet [9] and that the pyridoxine requirements of the rat,[10] dog,[11] mouse,[12] and chick [13] fall in the same general range as those for *thiamine*

[1] Harris, S A and Folkers K H Synthetic Vitamin B_6, Science **89**: 347 1939

[2] *Gunsalus* I C Umbreit W W Bellamy W D., and Foust, C E. Some Properties of Synthetic Codecarboxylase, J Biol Chem. **161** 743 1945 Lichstein H C Gunsalus I C and Umbreit W W Function of Vitamin B_6 Group Pyridoxal Phosphate (Codecarboxylase) in Transamination J Biol Chem **161**: 311 1945

[3] György P and Eckardt, R E Vitamin B_6 and *Skin Lesions in* Rats Nature **144** 512 1939

[4] Chick H ElSadr M M and Worden A N Occurrence of Fits of an Epileptic Nature in Rats Maintained for a Long Period on a Diet Deprived of Vitamin B_6, *Biochem* J **34** 595 1940 Daniel E. P Kline O L. and Tolle C D A Conclusive Syndrome in Young Rats Associated with Pyridoxine Deficiency J Nutrition **23** 205 1942

[5] Fouts P J Helmer O M Lepkovsky S and Jukes T H Production of *Microcytic* Hypochromic Anemia in Puppies on Synthetic Diet Defi ient in Rat Antidermatitis Factor (Vitamin B_6) J Nutrition **16** 197 1938

[6] Wintrobe M M Follis R H Miller M H *Stein H J* Akuyaga R Humphreys S Suksta A and Cartwright, G E. Pyridoxine Deficiency in Swine with Particular Reference to *Anemia* Epileptiform Convulsions and Fatty Liver Bull Johns Hopkins Hosp **72** 1 1943

[7] Rinehart J F and Greenberg L. D Arteriosclerotic Lesions in Pyridoxine Deficient Monkeys Am. *J Path* **25** 481 1949

[8] Greenberg L. D and Rinehart J F Xanthurenic Acid Excretion in Pyridoxine Deficient Rhesus Monkeys, Federation Proc **7** 157 1948 *Reid D F* Lepkovsky S Bonner D and Tatum E L. The Intermediary Metabolism of *Tryptophane* in Pyridoxine-Deficient Rats, *J Biol* Chem **155** 299 1944 Axelrod H E Morgan A F and Lepkovsky *S* The Fate of Tryptophane in Pyridoxine Deficient and Normal Dogs J Biol Chem **160**: 155 1945

[9] *Miller* E C and Baumann C. A Relative Effects of Casein and Tryptophane on the Health and Xanthurenic Excretion of *Pyridoxine* Deficient Mice J Biol Chem **157**: 551 1945

[10] Conger T W and Elvehjem C A The Biological Estimation of Pyridoxine (Vitamin B_6) J Biol Chem **138** 555 1941

[11] *Michaud E C and Elvehjem* C A Nutritional Requirements of the Dog Nutrition Abstr & Rev **13**: 323 1944

In light of the importance of vitamin B_6 in animal nutrition, as demonstrated by these and other reports clinicians have attempted to discover its importance as a nutrient for man

Soon after the vitamin became available for parenteral administration, Spies, Bean, and Ashe [14] reported that four undernourished patients exhibiting extreme nervousness, insomnia, irritability, abdominal pain, weakness, and difficulty in walking despite treatment with thiamine riboflavin and niacin, responded dramatically to administration of vitamin B_6.

A year later Spies, Ladisch, and Bean [15] determined vitamin B_6 excretion after a test dose of 50 mg in normal males and in ambulatory patients described as B-complex deficient During the first hour after administration, 8% to 10% of the test dose was excreted by the normal subjects and less than 1% by those diagnosed as having a B-complex deficiency

These observations of Spies and his group led others to study the effects of this vitamin in a number of clinical conditions Antopol and Schotland [16] reported improvement in six patients suffering from pseudohypertrophic muscular dystrophy Changes in such cases are difficult to evaluate, however and report of improvement was based largely upon subjective findings Ferrebee and co workers [17] reported negative results in 20 cases of *muscular dystrophy treated* with vitamins E and B_6

Later Rosenbaum, Portis, and Soskin [18] reported relief from extreme muscular weakness associated with neurasthenia one to 14 days following administration of 50 mg doses of vitamin B_6 in two patients No response was noted in a patient with myasthenia gravis

Eaton, Woltman, and Butt [19] concluded from a clinical trial that pyridoxine was of no benefit in amyotrophic lateral sclerosis, progressive muscular atrophy, or progressive muscular dystrophy

In three separate clinical studies efforts to relieve the symptoms of paralysis agitans with either intravenous or oral administration of pyridoxine resulted in failure Barker Stein Miller, and Wintrobe [20] used intravenous injections of 100 mg per day over a two week period in seven patients with obvious manifestations of Parkinsonism In no case was the slightest evidence of improvement obtained Zeligs [21] found no beneficial effects whatever in 15 similar patients after repeated injection of 50 to 100 mg doses of the vitamin Baker [22] studied 19 cases of paralysis agitans treated with 100 mg doses of vitamin B_6 by injection, or with daily oral doses of 50 mg Results of oral medication were suggestive but as a whole the study furnished no basis for concluding that the vitamin is of any value in treatment of this syndrome Meller [23] studied four cases of postencephalitic and 6 cases of idiopathic paralysis agitans given 50 mg of B_6 subcutaneously or intramuscularly daily for 10 days, 100 mg daily for three or four days and further treatment depending on response for periods of 19 days to five months As a result he agreed with other investigators that postencephalitic cases fail to respond to B_6 therapy In the idiopathic form of the disease, decreased pain and rigidity and increased sense of well-being were observed, a result Meller considered significant in a disease of this chronicity

Results of the use of pyridoxine in dermatology are not conclusive Wright Samitz, and Brown [24] reported a two-year therapeutic trial of the vitamin in treatment of various dermatoses Improvement was noted in several cases of seborrheic or seborrhoid eruptions, but the study did not include control cases and the possibility of spontaneous improvement could not be eliminated Pyridoxine deficiency as determined by measure of urine excretion of pyridoxine was not a reliable index of the patient s response to pyridoxine therapy Jolliffe Rosenblum and Sawhill [25] studied the effect of pyridoxine in treatment of adolescent acne Although this condition apparently is subject to spontaneous change and seasonal variation these workers were led to conclude that daily oral doses of 50 to 250 mg of the vitamin resulted in improvement in the skin lesions More than 80 patients were observed in the trial

Following the observation of Chick and co-workers [26] that epileptiform seizures occurred in pigs maintained on a vitamin B_6 deficient ration Fox and Tullidge [27] studied pyridoxine effects in human epilepsy Eight boys 14 to 15 years of age with varying degrees of petit mal and occasional grand mal seizures, were selected for study because their fits occurred regularly After treatment with 20 to 100 mg of pyridoxine daily for four to eight weeks no evidence of increase or decrease of seizures or any other mental or physical change was noted

In attempts to improve the Army Motion Sickness Preventive which consisted of sodium amytal, atropine, and scopolamine, Smith [28] found that thiamine and pyridoxine alone or in combination were of no demonstrable value

A number of attempts have been made to determine the value of pyridoxine in preventing or speeding recovery from the nausea and vomiting that occur frequently after large doses of roentgen radiation As early as 1943 Maxfield, McIlwain, and Robertson [29] reported favorable response in more than 50 patients treated by injection of 25 mg of pyridoxine at the onset of radiation sickness and then by similar doses daily until relief was obtained Although enthusiastic about the effect of pyridoxine the authors believed that it should not preclude other medication as needed In a study of 24 cases Shorvon [30] obtained gratifying results in 22 patients He observed that oral doses of 50 mg daily, or two parenteral doses of 50 mg weekly resulted in comparable responses

Wells and Popp [31] noted favorable responses when 200 mg of pyridoxine was injected one half hour before roentgen treatment In 200 cases response was excellent or good in two thirds and fair or poor in one third Maximum benefit was noted with injection of 200 mg but not with 50 mg or less The lack of response from placebo treatment was convincing

Following the early enthusiastic report by Willis and co-workers [32] of the success of pyridoxine in the treatment of 38 cases of nausea and vomiting of pregnancy Weinstein Mitchell and Sustendal [33] obtained similar results The latter authors

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[12] Schweigert B S Sauberlich H E. Elvehjem C A and Baumann C A Dietary Protein and the Vitamin B_6 Content of Mouse Tissue J Biol Chem **165** 187 1946

[13] Bird H R The Vitamin Requirements of Chicks Vitamins and Hormones **5**: 163 1947

[14] Spies T D Bean W B and Ashe W F A Note on the Use of Vitamin B_6 in Human Nutrition J A M A **112**: 2414 (June 10) 1939

[15] Spies T D Ladisch R K and Bean W B Vitamin B_6 (Pyridoxine) Deficiency in Human Beings J A M A **115** 839 (Sept 7) 1940

[16] Antopol W and Schotland C. E Use of Vitamin B_6 in Pseudo Hypertrophic Muscular Dystrophy J A M A **114** 1058 (March 23) 1940

[17] Ferrebee J W Klinigman W O and Frantz, A M Vitamin E and Vitamin B_6 Clinical Experience in the Treatment of Muscular Dystrophy and Amyotrophic Lateral Sclerosis J A M A **116**: 1895 (April 26) 1941

[18] Rosenbaum E E. Portis S and Soskin, S Relief of Muscular Weakness by Vitamin B_6, J Lab & Clin Med **27**: 763 1942

[19] Eaton L. M Woltman H W., and Butt H R Vitamin E and B_6 in Treatment of Neuromuscular Diseases, Proc. Staff Meet Mayo Clin **16** 523 1941

[20] Barker W H Stein J Miller M H and Wintrobe M M Failure of Pyridoxine (Vitamin B_6) to Modify the Parkinsonian Syndrome Bull Johns Hopkins Hosp **69**: 266 1941

[21] Zeligs M A Use of Pyridoxine HCl in Parkinsonism J A M A **116** 2148 (May 10) 1941

[22] Baker A B Treatment of Paralysis Agitans with Vitamin B_6 (Pyridoxine HCl) J A M A **116** 2434 (May 31) 1941

[23] Meller C L. Ten Cases of Paralysis Agitans Treated with Vitamin B_6, Minn Med **25** 22 1942

[24] Wright C S Samitz, M H and Brown H Vitamin B_6 (Pyridoxine) in Dermatology Arch Derm. and Syph **47** 651 1943

[25] Jolliffe N Rosenblum L. A and Sawhill T The Effects of Pyridoxine (Vitamin B) on Persistent Adolescent Acne J Invest Dermat. **5** 143 1942.

[26] Chick H Macrae T F Martin A J P and Martin C J The Water Soluble B Vitamins Other Than Aneurin (Vitamin B_1) Riboflavin and Nicotinic Acid Required by the Pig Biochem. J **32** 2207 1938

[27] Fox J T and Tullidge G M Pyridoxine (Vitamin B) in Epilepsy The Lancet **2**: 345 1946

[28] Smith P K Effect of Various Substances on Swing Sickness Proc Soc Exp Biol and Med **63** 209 1946

[29] Maxfield J R McIlwain A J and Robertson J E Treatment of Radiation Sickness with Vitamin B_6 (Pyridoxine HCl) Radiology **41** 383 1943

[30] Shorvon L. M Pyridoxine in Treatment of Radiation Sickness Brit J Radiol **19** 369 1946

[31] Wells J J and Popp W C The Use of Pyridoxine HCl in the Treatment of Radiation Sickness Preliminary Report Proc Staff Meet Mayo Clin. **22**: 452 1947

[32] Willis R. S Winn W W Morris A T Newsome A A and Massey W S Clinical Observations in Treatment of Nausea and Vomiting in Pregnancy with Vitamins B_1 and B Preliminary Report Am J Obst & Gynec. **44** 265 (Aug) 1942

[33] Weinstein B B Mitchell G J and Sustendal G F Clinical Experiences with Pyridoxine HCl in Treatment of Nausea and Vomiting in Pregnancy Am J Obst & Gynec **46** 283 1943

administered an initial dose of 50 to 100 mg, followed by doses of similar size three times weekly until nausea subsided Response was most notable in that group of patients in which symptoms were of such severity that hospitalization would ordinarily have been required These authors concluded that while pyridoxine is of great value, the importance of sedative and diet instructions should not be overlooked A later report from the same clinic [34] recorded further experience in which the majority of 78 pregnant women treated with pyridoxine responded favorably The milder attacks of nausea and vomiting were treated with oral doses of 60 to 80 mg of pyridoxine daily, while the more severe were treated with intravenous doses of 100 mg daily for a few days, then with daily oral doses of 80 mg Similar experience has been reported by Silbernagel and Burt [35]

Failure of pyridoxine in treatment of nausea and vomiting of pregnancy was described by Hesseltine [36] who stated that in his experience hyperemesis gravidarum occurs very infrequently, and that less serious nausea and vomiting, although more common, is difficult to evaluate From results of a controlled study of 16 cases with varying degrees of nausea and vomiting in which 100 mg of pyridoxine hypodermically or placebo treatment was given daily, Hesseltine concluded that the use of pyridoxine for hyperemesis gravidarum as advocated in the literature is valueless and without justification

Clinicians who have reported beneficial results with pyridoxine in treatment of nausea and vomiting of pregnancy have been aware that use of the vitamin was empirical and have been cautious in claiming therapeutic effectiveness A biochemical basis for such effectiveness has been provided, however, in the recent report by McGanity, McHenry, Van Wyck, and Watt [37] In an earlier study by this group [38] it was demonstrated by changes in blood urea values that pyridoxine depleted rats and dogs differed from normal animals in ability to metabolize protein Following this experiment, blood urea levels were determined in normal non pregnant women, normal pregnant women, and in 17 pregnant women in the first trimester with nausea and vomiting of a severity classed as hyperemesis gravidarum The fasting blood urea level was found significantly lower in normal pregnant than non pregnant subjects It was even lower in patients with hyperemesis gravidarum than in normal pregnant women, but was restored to normal pregnancy value after the administration of pyridoxine The response to a test load of an amino acid was studied in the same group of women Blood urea increased to a maximum six hours after oral administration of 30 mg of DL alanine, returning to original values within 12 hours in the non-pregnant and normal pregnant women In women with hyperemesis gravidarum blood urea levels rose but failed to decrease significantly between the sixth and the twelfth hours, thus exhibiting a flat curve Supportive therapy alone for 72 hours did not alter response to DL-alanine, but supportive therapy supplemented with 120 mg of pyridoxine produced normal pregnancy response to the test

It is difficult to say whether these observations indicate that the biochemical defect in hyperemesis gravidarum is a pyridoxine insufficiency or a defective protein metabolism leading to excessive excretion of amino acids that are effectively deaminated in the presence of additional amounts of pyridoxine

From the work of Umbreit and Gunsalus [39] it is clear that pyridoxine is transformed in the body to pyridoxal and pyridoxamine, and that pyridoxal phosphate is the co-enzyme for the systems essential for the decarboxylation and transamination reactions in amino acid metabolism The exact position of the phosphate in the pyridoxal molecule has not been determined

A number of workers have been concerned with the need for pyridoxine in human nutrition and it appears now to be well established that in man this vitamin has a specific function Suggestive evidence was furnished by Hawkins and Barsky [40] who observed mild changes in the blood white cell picture in a male subject maintained on a pyridoxine-deficient diet for 56 days Greenberg and co-workers [41] observed in two human subjects, on a pyridoxine-deficient diet for an extended period, that excretion of xanthurenic acid was greatly increased after a test dose of tryptophane This xanthurenic acid excretion was reduced following the administration of pyridoxine The relation of the excretion to xanthurenic acid, a product of tryptophane metabolism, to pyridoxine requirement was first observed by Lepkovsky, Roboz, and Haagen-Smith,[42] who isolated the compound from the urine of rats on a pyridoxine-deficient diet A recent report from Mueller and Vilter,[43] in which they describe symptoms of pyridoxine deficiency resulting from the ingestion of the pyridoxine analog desoxypyridoxine, further supports the conclusion that there is a human need for this vitamin, as indicated by the following excerpt

"Eight patients suffering from various chronic illnesses were given 60-150 mg of desoxypyridoxine intramuscularly daily while they were maintained on a diet low in vitamins of the B complex Hematologic studies were done before and at biweekly intervals after the institution of the experimental regime Urine assays for pyridoxic acid, thiamin, riboflavin, and N^1 methyl nicotinamide were done at weekly intervals in most instances When the deficiency state developed, the patient was placed on a vitamin B complex mixture devoid of pyridoxine and later on pyridoxine alone The desoxypyridoxine and diet were continued throughout the entire experimental period

"Seborrhea-like skin lesions developed about the eyes, nose, and mouth within two to three weeks in seven of the eight patients In three of the seven the lesions were quite severe Half of the patients developed erosions in and around the mouth resembling cheilosis of riboflavin deficiency and glossitis resembling morphologically that seen in niacin deficiency One patient developed severe systemic symptoms A mild but definite lymphocytopenia appeared in seven of the eight patients No anemia occurred These manifestations were unchanged when the vitamin B complex mixture devoid of pyridoxine was given but responded in 48 to 72 hours of the parenteral administration of 100 to 200 mg of pyridoxine "

It is the authors' opinion that the lesions described are specific for pyridoxine deprivation and constitute at least a part of the human syndrome of this deficiency

A specific demonstration of the need for pyridoxine in human nutrition is found in the report of Snyderman, Carretero, and Holt [44] Their summary of their results is stated as follows

"A pyridoxine deficient diet, given for therapeutic reasons to two mentally defective infants for 76 and 130 days respectively, failed to produce clinical benefit but yielded information of nutritional interest Both subjects developed evidences of pyridoxine deficiency, indicating that pyridoxine is a human dietary essential The first change noted was the prompt disappearance of pyridoxic acid from the urine and a reduction of the total urinary pyridoxine to low values ranging from 0 2 to 2 mg per day Subsequently, both infants lost the ability to convert tryptophane to nicotinic acid, an effect which was desired in order to block a metabolic path for tryptophane that might be competing with normal tissue synthesis A plateauing of the weight curve occurred 33 and 73 days after the institution of the regime On the 76th day one subject developed a series of convulsions which were promptly relieved by the administra tion of pyridoxine The other subject developed a hypochromic anemia at approximately the 130th day This responded dramatically to pyridoxine, a rise in reticulocytes was noted after 72 hours reaching a peak in four days after which red cell count and hemoglobin rose to normal Both subjects gained weight normally after supplementation In marked contrast to the excellent and prompt clinical response to the administration of pyridoxine was a delay in the reappearance of the ability to convert tryptophane to nicotinic acid "

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[34] Weinstein B B Wohl Z, Mitchell G J and Sustendal J E Oral Administration of Pyridoxine HCl in Treatment of Nausea and Vomiting of Pregnancy, Am J Obst & Gynec. 47: 389 1944

[35] Silbernagel W M and Burt O P Effects of Pyridoxine on Nausea and Vomiting of Pregnancy Ohio State M J 39: 1113 1943

[36] Hesseltine H C Pyridoxine Failure in Nausea and Vomiting of Pregnancy Am J Obst & Gynec 51: 82 (Jan) 1946

[37] McGanity W J McHenry E W Van Wyck H B and Watt G L An Effect of Pyridoxine on Blood Urea in Human Subjects J Biol Chem 178: 511 1949

[38] Hawkins W W McFarland M L, and McHenry E W Nitrogen Metabolism in Pyridoxine Insufficiency J Biol Chem. 166: 223 1946

[39] Umbreit and Gunsalus in O Kane D E and Gunsalus I C The Resolution and Purification of Glutamic Aspartic Transminases J Biol Chem 170 425 1947

[40] Hawkins, W W and Barsky J An Experiment on Human Vitamin B_6 Deprivation Science 108: 284 1948

[41] Greenberg L D Bohr D F McGrath H and Rinehart J F Xanthurenic Acid Excretion in the Human Subject on a Pyridoxine Deficient Diet Arch Biochem 21 237, 1949

[42] Lepkovsky S Roboz E and Haagen-Smith A J Xanthurenic Acid and Its Role in the Tryptophane Metabolism of Pyridoxine Deficient Rats J Biol Chem 149: 195 1943

[43] Mueller J F, and Vilter, R W Pyridoxine Deficiency in Human Beings Induced by Desoxypyridoxine J Clin Invest 29: 193 1950

[44] Snyderman S E, Carretero, R and Holt, L E Pyridoxine Deficiency in the Human Being Federation Proc 9: 371 1950

These last two studies provide evidence that there is a human dietary requirement for pyridoxine

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies A copy of the rules on which the Council bases its action will be sent on application

R T Stormont M D *Secretary*

Corticotropin.—Acthar (Armour) —

Actions and Uses —The adrenocorticotropic hormone of the anterior pituitary gland stimulates the adrenal cortex to secrete its entire spectrum of hormones Hormonal effect can be exerted only if a functioning adrenal cortex is present Corticotropin is rapidly utilized in the body, its effect rarely exceeds six hours This necessitates repeated administration of the drug The physiologic and metabolic effects of the hormone are due to the adrenal corticosteroids elaborated and are, in general, similar to those described for cortisone acetate Because of its rapid absorption and utilization these effects appear more promptly than with parenteral or oral administration of cortisone acetate The prompt fall of the circulating eosinophil count when therapeutic doses of corticotropin are given is the basis for the Thorn test of adrenocortical response The drug is of value in the same disease conditions for which cortisone acetate is used except that it is not effective for the treatment of Addison s disease

In general, long term administration of either corticotropin or cortisone acetate induces similar undesired hormonal effects However, hypertension and virilism are more likely with the use of corticotropin, while cortisone acetate may elicit involution or partial atrophy of the adrenal cortex A period of depressed adrenocortical function follows sudden cessation of corticotropin administration, but may be avoided by gradual reduction both of the dosage and the number of doses given

The potent metabolic effects of corticotropin require frequent check on the patient s weight blood pressure, and electrolyte balance A high potassium, low sodium intake is advisable if protracted treatment or a large dose of corticotropin is necessary

Corticotropin is contraindicated for long term treatment in hypertension, diabetes mellitus mental disturbances chronic nephritis, congestive heart failure, Cushing s syndrome, and hirsutism It has been reported that allergic sensitivity to corticotropin may develop in a small percentage of patients, the reactions have varied from anaphylactoid shock to giant urticaria

Dosage —The average adult dose of corticotropin is 40 to 50 provisional U S P units daily, administered parenterally in four divided doses If the desired clinical effect is not obtained, the dosage may be cautiously and gradually increased to a total of 100 provisional U S P units daily Maintenance dosage should be at the lowest level required to continue clinical improvement

Tests and Standards —Corticotropin is assayed biologically by the measurement of the adrenal ascorbic acid response in hypophysectomized rats. An International Standard has been established by the World Health Organization The provisional U.S P unit is identical with the International unit. Each is defined as representing the specific adrenocorticotropic activity of 1 mg of the International Standard

Lyophilized Acthar (Pork) Vials containing the equivalent of 10 15, 25 and 40 provisional U S P units The Armour Laboratories Chicago

Sodium Ascorbate Injection U.S P (See New and Nonofficial Remedies 1951, p 432)

Solution Sodium Ascorbate 2 cc ampuls A solution containing sodium ascorbate equivalent to 50 mg of ascorbic acid in each cubic centimeter Stabilized with 0 1 per cent sodium bisulfite and 0 1 per cent cysteine hydrochloride Meyer Chemical Company, Detroit

Solution Sodium Ascorbate 2 cc and 5 cc ampuls A solution containing sodium ascorbate equivalent to 0 1 gm of ascorbic acid in each cubic centimeter Stabilized with 0 1 per cent cysteine hydrochloride Meyer Chemical Company Detroit

Progesterone-U.S P (See New and Nonofficial Remedies 1951 p 361)

Solution Progesterone in Oil with Benzyl Alcohol 2% 10 cc vials A solution in sesame oil containing 25 mg of progesterone in each cubic centimeter Preserved with 0 004% phenylmercuric benzoate Biophysics Laboratories, Inc , Los Angeles

Solution Progesterone in Oil 10 cc vials A solution in peanut oil containing 10 mg or 25 mg of progesterone in each cubic centimeter Preserved with 0 5 per cent chlorobutanol Carlo Erba, Inc , New York

Tetanus Toxoid, Alum Precipitated U.S P (See New and Nonofficial Remedies 1951, p 383)

Tetanus Toxoid (Alum Precipitated) 5 cc vials (five immunizations) Preserved with thimerosal 1 10 000 Pitman-Moore Company, Division of Allied Laboratories, Inc , Indianapolis

Tetanus Toxoid Alum Precipitated 2 cc vials (one immunization) and 10 cc vials (five immunizations) Preserved with thimerosal 1 10 000 E R Squibb & Sons, New York

Tyrothricin U.S P (See New and Nonofficial Remedies 1951, p 44)

Solution Tyrothricin 2% 50 cc vials A 92% alcohol solution containing 20 mg of tyrothricin in each cubic centimeter Parke, Davis & Company, Detroit

Tetanus Toxoid U.S P (See New and Nonofficial Remedies 1951, p 382)

Tetanus Toxoid Fluid 1 cc vials, for supplementary immunizations Preserved with thimerosal 1 10,000 E R Squibb & Sons, New York

Amphetamine Sulfate-U.S P (See New and Nonofficial Remedies 1951, p 188)

Powder Amphetamine Sulfate Bulk, 100 gm and 1 kg packages for compounding use Biorganic Laboratories, Inc , Brooklyn

Theophylline Sodium Glycinate (See New and Nonofficial Remedies 1951, p 304)

Tablets Cinaphyl 0 16 gm and 0 33 gm U S Patent 2,433 765 B F Ascher & Company, Inc Kansas City Mo

Chloramphenicol U.S P (See New and Nonofficial Remedies 1951 p 118)

Capsules Chloromycetin 100 mg U S Patents 2,483,871, 2 483 884 2,483,886 2 483 892 Parke Davis & Company, Detroit

Hexachlorophene (See New and Nonofficial Remedies 1951 p 52)

Septisol 3 78 liter bottles, 18 9 liter pails and 113 5 and 208 1 liter drums A soap containing 2% hexachlorophene Vestal Inc St Louis

Mephenesin (See New and Nonofficial Remedies 1951 p 165)

Tablets Tolulexin 0 5 gm E S Miller Laboratories Inc , Los Angeles

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ACTH NOMENCLATURE AND STANDARDIZATION

The pituitary adrenocorticotropic hormone (ACTH) was originally given the generic designation of corticotrophin in 1938 by the Third International Conference on the Standardization of Hormones of the League of Nations Recently this name was reconsidered and again approved by the World Health Organization's Subcommittee on Non-Proprietary Names of the Expert Committee on the International Pharmacopeia The adoption of the "-trophin" suffix posed a problem because the "-tropin" ending is generally used in the United States to describe activity directed toward stimulating a specific organ Both suffixes are derived from the Greek "-trophos" referring to nutrition, "-tropos," to a turn After considerable deliberation, the Council on Pharmacy and Chemistry has decided to utilize the generic designation of corticotropin for the description of the hormone in New and Nonofficial Remedies This generic name is not only more consonant with local usage but also more descriptive of the actual hormonal effect which is turned toward the adrenal cortex This pituitary principle does not provide nutrition for the adrenal cortex

The variation in nomenclature between the World Health Organization's and the Council on Pharmacy and Chemistry's generic designation for corticotropin is minor and should not cause confusion In fact, the World Health Organization recognizes that minor differences in spelling may occur because of language variation and national usage

Of more serious nature, however, has been the problem of standardization of corticotropin Originally, the dosage of the hormone had been expressed in milligrams, and many physicians undoubtedly believed that the weight statement on the label represented the weight contents of the vial Since corticotropin is not a pure active principle or chemical entity, but varies in potency with each lot prepared, it had been standardized by comparing the biologic activity of each new batch extracted with an arbitrarily selected house reference standard of corticotropin, utilizing the assay method suggested by Sayers, Sayers, and Woodbury Label designations of 20 mg thus did not mean that the vial contained 20 mg of substance but rather that the content of the vial had the same potency by biologic assay as 20 mg of the house reference standard This procedure of standardization is customary for comparing an unknown sample of a biologic principle of variable potency with an arbitrary unit in order to have some uniformity of clinical response

Subsequently, the World Health Organization's Expert Committee on Biological Standardization adopted the house standard of the original manufacturer as the international standard The International Unit for corticotropin was defined by the same body as "the specific ACTH activity of one milligram of the International Standard " Although practically the entire supply of this house standard was generously sent to the offices of the World Health Organization, the quantity was extremely limited for world use The International Reference Standard of corticotropin, necessary for comparative assays and establishment of manufacturers' own reference standards, therefore was furnished in powder form sealed in glass ampuls containing only 1 3 or 4 8 mg. The choice of container was unfortunate, since the powder adhered to the sides of the ampul and could not be entirely shaken free The amount that could be removed was frequently too small for accurate weighing The danger of glass particle contamination also existed Aqueous solutions of the standard could not be utilized because they were unstable and lost potency rapidly These limitations became evident when several other firms introduced their own brands of corticotropin and found themselves unable to establish a house reference standard in terms of the International Standard The Food and Drug Administration, therefore, temporarily required each manufacturer to create his own house standard, assay technics, and unit of potency—the objective being for a unit to be comparable in potency with 1 mg of the first manufacturer's reference standard No clear interrelationship existed between the variously defined and derived house units To complicate the matter further, corticotropin derived from the original modified Li method varied in physical characteristics, stability, and yield of hormone from that obtained by the Astwood technic Nevertheless, each substance produced specific adrenocorticotropic stimulation

At this juncture, the physician was faced with the unsatisfactory situation of utilizing an inconsistently standardized hormone whose potency varied from brand to brand, as attested by animal experimentation and clinical experience On March 22, 1951, at the offices of the Food and Drug Administration in Washington, representatives of the firms, of the U S P Committee of Revision, of the Council on Pharmacy and Chemistry, and of the Food and Drug Administration discussed the problem It was agreed that the most desirable solution would be to set up a provisional U S P reference standard to overcome the shortcomings of the International Reference Standard Although the U S P Committee of Revision does not usually establish standards for drugs which have not been acted on favorably by the U S P Subcommittee on Scope, in this instance it was felt that the U S P organization could render a distinct service to medicine by creating such a provisional reference standard It was also agreed that the provisional U S P unit of corticotropin should be identical with the International Unit and thus represent the specific biologic activity of 1 mg of the International Standard for corticotropin

A supply of corticotropin was obtained from three commercial sources in the United States and pooled and compounded in such a way as to incorporate 0 1 mg of the powder into a 20 mg tablet. The office of the U S P Committee of Revision also had obtained a substantial quantity of the International Standard in powder form and similarly compounded this material into tablets weighing about 20 mg and containing 0 1 mg or 0 1 International Unit In comparative assay as measured by the Sayers or the Sayers-Munson method, it was ascertained that the provisional U S P reference standard contained 0 12 International Units per 20 mg tablet Further studies on improvement of corticotropin assay are now under way by a U S P study panel

It now becomes possible and desirable for all manufacturers to label their products in terms of the provisional U S P unit, thus providing some assurance of uniformity among the various brands of corticotropin Physicians should note that, while corticotropin will then be standardized biologically, the effects in human beings of the various commercial preparations will not be completely comparable, because the assay method does not overcome the known differences between animal and human response Furthermore, all brands of corticotropin are not made by the same process Certain differences among brands are evident, such as stability in solution, solubility in saline solutions, and rate of absorption Clinical experience will have to determine which process of manufacture yields the most desirable product Then, further measures may be taken to eliminate differences in response by agreement on a uniform method of extraction of corticotropin

DA COSTA'S SYNDROME, OR NEUROCIRCULATORY ASTHENIA

The appearance in 1940 of the second edition of Sir Thomas Lewis's "The Soldier's Heart and the Effort Syndrome"[1] focused the attention of physicians once more on one of the most frequent causes of invalidism among soldiers Because the symptoms resembled those of fatigue following effort in normal persons, Lewis suggested the name "effort syndrome" The name "neurocirculatory asthenia" was suggested by a team of medical reserve corps officers of the American Army[2] sent to Colchester, England, to study the condition with Sir Thomas Lewis They felt that the symptoms comprising effort syndrome in normal persons were not the same as those observed in neurocirculatory asthenia Da Costa described its occurrence many years ago in the United States He stressed that the condition was not confined to soldiers, since the symptoms were frequently present before enlistment. Fever, diarrhea, wounds, and strenuous existence of the soldiers were predisposing factors

The more recent contributions by Wood,[3] by Cohen and his co-workers,[4] and by Walker[5] suggest that the basic mechanism of neurocirculatory asthenia has not been elucidated The term "effort syndrome" is incorrect, in the opinion of Wood, because the symptoms of the syndrome are not confined to exertion They may occur at any time during the day or night, and they are invariably provoked by emotion The tendency is to regard it as a functional disorder of the autonomic nervous system of psychogenic origin Given a neuropathic predisposition based on hereditary and constitutional inadequacy, many factors can assume the role of exciting or initiating agents The syndrome is characterized by dyspnea, easy fatigability, palpitation or heart consciousness, fainting, giddiness, headache, sweating, blueness or mottled coloring of the hands, dermatographia, and a variety of neurovascular phenomena The pulse at rest and at sleep is normal but is easily accelerated by emotion or exercise and is abnormally slow in its return to normal after exercise Blood pressure is as a rule normal at rest but exhibits the same exaggerated response to exercise and emotion as does the pulse The electrocardiogram does not reveal any structural changes

Diagnosis of the syndrome presents few difficulties The diagnostic problem involves recognition of possible associated disease, such as pulmonary tuberculosis, exophthalmic goiter, malaria, coronary artery disease, thyrotoxicosis, and chronic infections Wood[3] stresses that patients with Da Costa's syndrome experience a true sensation of breathlessness in circumstances that would not affect a normal person Hurried, irregular, and shallow breathing is common in the more nervous patients, apart from effort, frequent deep sighs occur in many, in a few there is true hyperventilation, usually the result of emotion

Emotional reaction is the essential common factor in this syndrome According to Wood the special feature that distinguishes this group from other psychoneurotic physical patterns is the establishment of a link between the emotional reaction and effort The link was usually forged when emotional symptoms were misinterpreted and the heart blamed, so that fear of effort followed Wood concludes that Da Costa's syndrome, as he would prefer to call it, is an emotional reactive pattern peculiar to psychopathic personalities and to subjects with almost any form of psychoneurosis Walker[5] believes that all the manifestations of the syndrome can be explained as a normal physiologic response to anxiety

The therapeutic problem is to induce the patient to recognize that he is suffering from the effects of emotional disturbance and not from an organic disease Psychotherapy must be directed primarily toward recognition and removal of fears and anxiety In certain instances it may become imperative to alter the environment Occasional use of barbiturates is useful but is never curative Prognosis depends much on early recognition and early psychotherapeutic treatment

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[1] Lewis T The Soldier's Heart and the Effort Syndrome ed 2 London Shaw & Sons 1940

[2] Oppenheimer B S Levine S A Morison R A Rothschild M A St. Lawrence W and Wilson F N Report of Neurocirculatory Asthenia and Its Management Mil Surg (April June) 1918

[3] Wood P Da Costa's Syndrome (or Effort Syndrome) Brit M J 1 767 (May 24) 1941 Da Costa's Syndrome (or Effort Syndrome) The Mechanism of the Somatic Manifestations ibid 1 805 (May 31) 1941 Aetiology of Da Costa's Syndrome ibid 1: 845 (June 7) 1941

[4] Cohen M E White P D and Johnson R E Neurocirculatory Asthenia Anxiety Neurosis or the Effort Syndrome Arch Int Med 81: 260 (March) 1948

[5] Walker W J The Patient with Functional Cardiovascular Disorders (Neurocirculatory Asthenia) Am Heart J 42 97 (July) 1951

LOCAL HEALTH UNITS

Evidence is accumulating that the idea of local public health units is receiving favorable attention in an ever-widening circle This idea is expressed as Point 6 in the 12-point program of the American Medical Association for the advancement of medicine and public health, reading as follows

> *Establishment of local public health units and services and incorporation in health centers and local public health units of such services as communicable disease control, vital statistics, environmental sanitation, control of venereal diseases, maternal and child hygiene and public health laboratory services Remuneration of health officials commensurate with their responsibility*

A recent release by the National Health Council indicates that a number of states are making substantial progress in the establishment and expansion of local health unit services The report also points out that legislation now before the House Interstate and Foreign Commerce Committee providing for federal aid to local public health units is in danger of being by-passed unless Congressmen are made aware of its desirability

Medical service is the core of any local health unit, and the profession, through action of the House of Delegates of the American Medical Association, is formally on record as approving the principle of local health units But, as physicians have learned, mere approval is usually not sufficient to bring about a desired goal With the increased attention that is being given this subject, individual practitioners have a double duty to assist in furtherance of the program Enactment of a federal law facilitating the setting up of local health units will be an important forward step in making available health needs that the profession knows can be provided satisfactorily only at the local level Unless practicing physicians are closely identified with such programs at all stages, they run the risk of being overlooked when the time comes to decide how a given health unit shall function best at the local level

HEREDITARY OBESITY

The production of a hereditarily obese strain of mice has been recently reported by Ingalls and associates[1] Whereas the weights of young adult normal mice are in the range of 16 to 26 gm, the young adult obese mice weigh 38 to 56 gm A study of the nutritional and metabolic abnormalities of these obese animals is currently reported by Mayer[2] and associates of Harvard University and Jackson Memorial Laboratory, Bar Harbor, Maine

Ten obese and seven non-obese mice were placed in individual cages and given a free choice of three diets, each diet consisted of a mixture of fat, carbohydrate, and proteins fortified with minerals and vitamins In one diet 90% of the total calory content was in the form of protein The second diet contained 90% carbohydrates, the third 90% fats They found that obese mice ate on an average five calories more per day than the non-obese controls, sufficient to give a 16 gm increase in body weight by the end of 30 days The obese mice also selected proportionally more fat and less protein and carbohydrate

Since the diet selected by the obese animals was suggestive of the restricted carbohydrate diet often prescribed for diabetic patients, quantitative studies of blood sugar were made It was found that normally fed obese mice had a high blood sugar level, general above 200 mg per 100 cc Non-obese controls had a blood sugar level of the order of 110 mg per 100 cc After a four-hour fast, the blood sugar level of the obese animals fell 50 to 60%, whereas that of the controls underwent no appreciable change

The livers of the obese mice were characterized by a glycogen content far below that of the controls Obese mice also had glycosuria These observations demonstrate the existence of *hereditary diabetes independent* of environmental factors It was further found that obese diabetic *mice are insulin-resistant Even massive doses* fatal to normal mice produced no demonstrable toxic *symptoms and no fall in blood sugar*

LOS ANGELES BECKONS

Those who are planning to attend this year's Clinical Session of the American Medical Association in December have a bonus awaiting them a holiday in sunny California, away from winter's slush and snow, and an opportunity to enjoy the scenic beauty and unsurpassed recreational facilities of Los Angeles The superlatives applied to this city by its Chamber of Commerce are not without foundation Located in the center of picturesque Los Angeles County, the city is within easy reach of colorful orange groves, snow-capped mountain peaks, and coastal beaches Served by seven scheduled airlines and three transcontinental railroads, it is readily accessible to visitors from all parts of the country Its 1,271 hotels have accommodations for every taste and purse, and its numerous specialty restaurants, with their international cuisine, cater to the tastes of the most discriminating gourmet Entertainment is available in variety and abundance Los Angeles has been called the talent capital of the country Hollywood is an integral part of the city, and its movie, radio, and television studios draw thousands of visitors each year, as do the fashionable residential districts and exclusive shopping centers of Beverly Hills Other attractions in Los Angeles include its beautiful homes and public buildings, its ancient Spanish missions, the old Mexican shops of Olvera Street, the exclusive private mansions of Bel Air Park, Griffith Park and its planetarium, and Chinatown Among the fine hospitals of interest to visiting physicians is the 2,452-bed Los Angeles County Hospital, one of the largest and best equipped in the country For the athletically inclined the city boasts year-round golf, tennis, and swimming For those who have a day or two to spare before or after the Session there will be opportunities to visit one of the many nearby beaches or Santa Catalina Island, with its flying fish and submarine gardens Here indeed is an opportunity to mix pleasure with business and to profit from both

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[1] Ingalls A M Dickie M M and Snell G D Obese a New Mutation in the House Mouse, J Heredit 41:317 (Dec) 1950

[2] Mayer J Dickie M M Bates M W, and Vitale J J Free Selection of Nutrients by Hereditarily Obese Mice Science 113:745 (June 29) 1951

MEDICAL NEWS

ALABAMA

Company Presents Hospital to Communities—The Lloyd Noland Hospital in Fairfield has been presented by its owner the Tennessee Coal, Iron and Railroad Company, to the Lloyd Noland Foundation for the benefit primarily of the people of the western sections of Jefferson County Presentation of the hospital and all of its properties equipment, and facilities along with a substantial cash contribution for working funds, was made Aug 29 An additional sum of $75,000 was donated by the company to erect and equip an outpatient clinic buiding to be operated in conjunction with the 300-bed hospital The first four members of the board of trustees were selected by the communities, which include Fairfield, Ensley, and Bessemer The Tennessee Company selected the other three initial trustees of the foundation, the president, treasurer, and comptroller In the legal instrument establishing the trust, provisions were included whereby the people of the principal western communities will select the succeeding trustees The Lloyd Noland Hospital includes wards and semiprivate and private accommodations for both white and Negro patients In addition to clinics for all principal phases of medicine and surgery, it has a modern x ray department, a fully integrated laboratory, operating rooms, laundry, nurse's home, motor vehicles, and other equipment Its grounds embrace about 41 acres The contribution of the hospital by the Tennessee Company to the community and the resultant foundation arrangement will enable the hospital to reach into even greater realms of research, Mr Wiebel, president of the company, said He further stated, It will open up to the hospital means of participating in grants and endowments for medical undertakings heretofore not available to it as a private institution This should result in further advancement of the entire Birmingham community in the field of medical science "

CALIFORNIA

Dr Forsham to Direct Laboratory—Dr Peter H Forsham, Boston, has been appointed director of the Research Laboratory in Arthritis and Allied Diseases at the University of California School of Medicine, San Francisco The arthritis laboratory has been in operation for nearly a year and was established through a legislative grant that called for a joint effort on both the San Francisco and Berkeley campuses Work to find new materials for use against the diseases is being carried on in Berkeley, while a broad clinical application and research program is going ahead at San Francisco The laboratory in San Francisco is housed in temporary quarters pending completion of special facilities Dr Forsham, has been on the staff of the Harvard Medical School and the associated Peter Bent Brigham Hospital, Boston

COLORADO

Fall Postgraduate Conferences—The University of Colorado School of Medicine, Denver, is presenting the following postgraduate courses (1) Conference on Chest Diseases, Oct 18-20, co-sponsored by the Colorado Trudeau Society and the American College of Chest Physicians (2) Heart Disease, Nov 15 17, co sponsored by the Colorado Heart Association and the state department of public health, with Drs Paul D White, Boston, Gordon B Myers, Detroit, and John P Hubbard, Philadelphia lecturers (3) Poliomyelitis, Dec 13 15 (4) Pathological Physiological Seminars, Tuesday evenings beginning Sept 24 and continuing through Dec 15 Inquiries may be made to the Office of Director of Graduate and Postgraduate Medical Education, 4200 E Ninth Ave Denver 7

DISTRICT OF COLUMBIA

Annual District Meeting—The Medical Society of the District of Columbia will convene an annual session Oct 1-3 at the Hotel Statler under the presidency of Dr Frank D Costenbader Visiting speakers include the following

Richard H Freyberg New York Practical Considerations of the Management of Common Rheumatic Diseases
Alan C Woods Baltimore The Role of Corticotropin (ACTH) and Cortisone Therapy in Ophthalmology
John J McGraw Jr Bryn Mawr Pa Blood Dyscrasias Their Treatment by Cortisone and by Corticotropin
Rulon W Rawson New York Use of Corticotropin in Treatment of Neoplastic Diseases
E Cowles Andrus Baltimore Factors in the Selection of Cases for Surgery on the Heart Valves
William S Tillett New York Practical Aspects in the Clinical Use of the Streptococcal Enzymes Streptokinase and Streptodornase
Everett I Evans Richmond Thermal and Radiation Injury in Atomic Warfare
James S Tyhurst Halifax Nova Scotia Panic Syndrome in Atomic Warfare
Paul H Holinger Chicago Causes and Significance of Hoarseness
Samuel M Peck New York Fungus Infections and Their Treatment
Maurice L Tainter Rensselaer N Y Rationale of Selection Between Sympathetic Stimulants
Howard C Taylor Jr New York Carcinoma of the Cervix
Winslow T Tompkins, Philadelphia Nutritional Deficiencies as a Causative Factor in Premature Labor and Toxemia
Paul C Swenson Philadelphia Evaluation of Roentgen Procedures in Obstetrics
Meredith F Campbell New York Congenital Obstruction of the Urinary Tract
Joseph Hiram Kite Atlanta Early Diagnosis and Management of Some *Problems in Pediatric Orthopedics*
Edmund R McCluskey Pittsburgh Use and Abuse of Sulfonamides and Antibiotics

There will be sectional round table discussions from 2 to 4 p m each day

FLORIDA

City Gives Hospital Site—In ceremonies Aug 28 city officials of Winter Park presented a deed to 18 acres of city-owned property valued at $50 000 to the Memorial Hospital Trust Association The Memorial Hospital Trust Association of Winter Park was organized in March by a group of citizens who realized the need for a city hospital The fund drive is expected to open early this fall Plans for a 40 bed hospital have been drawn, and the ground acquired from the city will allow for building expansion, a nurses' home, and adequate parking areas The goal for the hospital drive has been set at one million dollars, one half of which will go into the building fund, and one half into a trust fund for maintenance All funds are expected to be raised locally with no aid from state or federal sources

ILLINOIS

Health Services for Children—Three new health services for children have been initiated by the state department of public welfare They are (1) a hospital specializing in psychiatric treatment for children under 18, to be located in Chicago s Medical Center District, (2) a diagnostic and treatment ward for emotionally disturbed children at Illinois Neuropsychiatric Institute (3) a unit for the treatment of youthful mental patients at Galesburg Research Hospital

Public Health News.—Dr George A. Wiltrakis Saint Charles has resigned as deputy director of the Illinois Department of Public Welfare, *a position he has held for the last* six years After Sept 1 he will devote his time to private practice and serve as consulting surgeon to the various institutions of the department Dr Wiltrakis has been in the Illinois state medical service since 1930, having been staff surgeon at the Elgin State Hospital and assistant superintendent of the Alton State Hospital and the Peoria State Hospital Dr Walter H Baer, superintendent of Peoria State Hospital, Peoria has been appointed acting deputy director succeeding Dr Wiltrakis

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Physicians are invited to send to this department items of news of general interest for example those relating to society activities new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting

Chicago

Personals.—Dr A C Ritchie, pathologist at the University of Oxford for several years, has become a visiting member of the faculty of the Chicago Medical School and will work in the laboratory of cancer research there ——Agnes A Sharp, Ph D , chief psychologist and director of research of the Psychiatric Institute of the Municipal Court, was honored at a dinner given by the institute staff Aug 29 Dr Sharp, who has been connected with the institute since 1933, will become superintendent of the volunteer program in state hospitals, a two-year study of rehabilitation techniques using volunteers from communities where the hospitals are located She resigned her position with the institute to accept the state program appointment

Chicago Medical Society Postgraduate Courses.—Two postgraduate courses are to be presented next month by the society at Thorne Hall, Lake Shore Drive and Superior St A course in endocrine and metabolic diseases will be given Oct 15-19, and a course in obstetrics and gynecology, Oct 22-26 The registration fee for each is $60 The minimum registration is 50 and the maximum 100 Checks should be made out to the Chicago Medical Society and sent to Willard O Thompson, M D , Chicago Medical Society, 86 E Randolph St , Chicago 1 Visiting faculty for each course includes the following

ENDOCRINE AND METABOLIC DISEASES

Ray F Farquharson Toronto Canada *Functions of the Anterior Lobe* of the Pituitary
E Perry McCullagh Cleveland Diagnosis of Pituitary Tumor
John R Mote Philadelphia Effect of Corticotropin (ACTH) on the Symptomatology of Disease
John E Howard Baltimore Clinical Applications of Corticotropin and Cortisone (Allergic Conditions)
Olof H Pearson New York Clinical Applications of Corticotropin and Cortisone (Neoplastic Diseases)
Samuel F Haines Rochester Minn Functions and Diseases of the Thyroid Gland
Henry H Turner Oklahoma City Thyroid Disorders of Childhood
Paul Starr Los Angeles Hypothyroidism in Children and Adults
Edward E. Henderson, Bloomfield N J Osteoporosis Etiology Diagnosis and Treatment
Leo T Samuels Ph D Salt Lake City Hormones Secreted by the Adrenal Cortex Their Physiologic Effects
William W Scott Baltimore Diagnosis and Treatment of Adrenal Cortical Tumors
Lawson Wilkins Baltimore Diagnosis and Treatment of Adrenal Cortical Hyperplasia
Dwight J Ingle Ph D Kalamazoo, Mich Effect of Cortisone in Health and Disease.
Earl T Engle Ph.D New York, Pituitary Gonadal Interrelations
Warren O Nelson Ph D Iowa City Preparation and Interpretation of the Testicular Biopsy

OBSTETRICS AND GYNECOLOGY

Earl T Engle Ph D New York, Physiology of Menstruation and the Hormonal Control of the Menstrual Cycle.
Fred A Simmons Boston Ovulation Timing.
Willard M Allen St. Louis, Functional Uterine Bleeding
Charles L Buxton New York Abuses of Hormonal Therapy
John Rock Brookline Mass. Treatment of Menstrual Disorders.
James T Bradbury Sc D Louisville Progesterone Demonstrations of the Induction of Secretory and Decidual Changes in Normal and Castrate Women
John L. McKelvey, Minneapolis Toxemias of *Pregnancy*
William C Keettel, Iowa City Induction of Labor
Ralph E Campbell Madison Wis Prolonged Labor and Its Treatment
Duncan E Reid Boston Heart Disease in Pregnancy
Carl P Huber Indianapolis X ray Pelvimetry
Richard W Telinde Baltimore Carcinoma of the Uterus with Reference to Diagnosis and Treatment

MISSOURI

Lectures for General Practitioners.—The postgraduate division of the Washington University School of Medicine in conjunction with the St Louis branch of the American Academy of General Practice will present a series of lectures for general practitioners on Tuesdays and Thursdays from 8 to 10 a m in the first floor auditorium of the north building of the medical school The lecturers are all members of the university medical school staff Following each lecture there will be a question period The course started Sept 18 and will continue through Oct 25 Information may be obtained from Dr Ben Eiseman, Assistant Dean, Washington University Medical School, 4580 Scott Avenue, St Louis 10

MONTANA

Conference on Physicians and Schools.—The Montana Medical Association will sponsor its second Conference on Physicians and Schools Oct 5 in the Capitol Building, Helena The conference will emphasize the development of a school health program in every community, utilizing private medical and dental personnel now available Fred V Hein, Ph D , consultant of the Bureau of Health Education of the American Medical Association, Chicago, will participate in the discussions This conference will provide an opportunity for all concerned to discuss the problems of a school health program

NEVADA

State Medical Meeting.—The Nevada State Medical Association held its annual meeting in Reno, Sept 13-15 under the presidency of Dr Walter F Quinn, East Ely Out-of state speakers included the following

John Z. Bowers Salt Lake City Medical Problems with Atomic Weapons
John W Cline San Francisco President, American Medical Association Common Lesions of the Breast
Ludwig A Emge San Francisco The Estrogen-Cancer Hypothesis.
Rutherford T Johnstone Los Angeles, Occupational Diseases Diagnostic Problems Confronting the General Practitioner
Dwight H Murray, Napa Calif What the A. M A Is Doing for the Doctor
Wesley E. Peltzer Salt Lake City Demonstration-Examination of the Peripheral Vascular Apparatus and Diagnostic Consideration of Common Disorders
Wallace A Reed Phoenix Ariz., Emergencies in Anesthesia
G Arnold Stevens Beverly Hills Calif , Surgical Treatment of Duodenal Ulcer

The Woman's Auxiliary met in conjunction with the association

NORTH CAROLINA

Proctologic Society Meeting.—The Piedmont Proctologic Society held its annual August meeting in Asheville Dr C Ross Deeds of Hendersonville, president, presided Officers elected for the coming year are Dr J Milton Stockman, Knoxville, Tenn , president, Dr Charles S Drummond, Winston Salem, N C , *vice president, and Dr* B Richard Jackson, *Raleigh, secretary* treasurer During the scientific session, the following papers *were presented*

B Richard Jackson Raleigh Incidence of *Postoperative Complications in Anorectal Surgery*
William Galvin Atlanta Anesthesia in Proctologic *Surgery*
Edgar *Bolling Atlanta, Reduction of* Postoperative Pain After Rectal Surgery

TENNESSEE

State Postgraduate Program on Internal Medicine —The Tennessee State Medical Association began its eighth postgraduate medical education program Sept 3 in Brownsville Cooperating in the training program are the *University of Tennessee College* of Medicine in Memphis, Vanderbilt University School of Medicine in Nashville, the Tennessee State Health Department, and the county medical societies of the state Dr John *Foley Dee* of Springfield, Mass , is conducting this program which deals with internal medicine and circulatory diseases He *will lecture* in the following towns on the same night each week for 10 weeks Brownsville, 8 p m Monday at Haywood *County* Hospital, Covington, 7 30 p m , Tuesday, Tipton County Health Department, Jackson, 7 45 p m Wednesday, Jackson *Clinic* Library, Bolivar, 7 30 p m Thursday, Western State Hospital, and Selmer, 7 30 p m Friday at Shackleford Funeral Home The remainder of the state is divided into nine other circuits with five centers to each circuit where the lectures will be repeated Two years are required to cover all the circuits in the state The circuit of which Memphis is a part will hold its meetings next fall Dr Dee's 10 lectures include talks on cortisone, corticotropin, and new developments in heart disease The program of the association just ended has been on psychiatry as applied to medicine Further information may be obtained from the secretary of local county medical societies

TEXAS

Greenwood Lecture.—Dr A Earl Walker of the Johns Hopkins Hospital, Baltimore, will give the James Greenwood Lecture in Neurosurgery at the University of Texas Medical Branch, Galveston Oct 3, on "Surgery of Involuntary Movement."

Postgraduate Conferences.—The Dallas Southern Clinical Society with the cooperation of the Dallas Society of General Surgeons and the faculty of Southwestern Medical School of the University of Texas will hold a conference in general surgery Oct 8 10, at the Melrose Hotel and Parkland Hospital in Dallas The guest speaker will be Dr Champ Lyons, professor and chairman of the department of surgery at the Medical College of Alabama, Birmingham From Dec. 10 to 12 the society together with the Dallas Internists' Club and the faculty of Southwestern Medical School will present a conference on recent advances in diagnosis and therapy at the Melrose Hotel The guest speaker will be Dr S Howard Armstrong Jr , chairman of the Rush department of medicine and professor of medicine at the University of Illinois College of Medicine, Chicago The registration fee for each course is $25 payable to the society at 433 Medical Arts Building, Dallas 1

WASHINGTON

Heart Disease Symposium.—The third annual symposium of the Washington State Heart Association in cooperation with the Washington State Department of Health on Diagnosis and Therapy of Peripheral Vascular Disease and Surgical Treatment of Mitral Stenosis' will be held Oct 19-20 in the Medical School Auditorium of the University of Washington, Seattle The speakers will be two authorities on peripheral vascular disease Dr Travis Winsor of Los Angeles, and Dr Norman E Freeman of San Francisco, and two of the pioneers in the recently developed and much discussed field of mitral commissurotomy Dr Robert P Glover and Dr O Henry Janton both of Philadelphia In addition to their scheduled papers, the speakers will conduct panel sessions and discuss questions from the audience There will be no registration fee

WEST VIRGINIA

Symposium on Peptic Ulcer—This symposium, sponsored by the Kanawha Medical Society, will be held at the Daniel Boone Hotel in Charleston Oct 3 It will open at 1 30 p m and adjourn by 9 p m The program will be presented by Drs Keith S Grimson, Robert J Reeves, Ralph W Rundles, and James P Hendrix, all of The Duke University School of Medicine, Durham, N C There will be a registration fee of $5, including dinner, which will be served at 6 30 p m All interested physicians in West Virginia and adjoining states are invited

WYOMING

State Medical Meeting.—The 48th annual meeting of the Wyoming State Medical Society will be held at Rock Springs Sept 27-29 under the presidency of Dr Karl E Krueger Guest speakers and their subjects include the following

J Earle Estes Minneapolis Occlusive Arterial Diseases of the Extremities
T Leon Howard Denver Infections of the Upper Urinary Tract in Children
Bascom W Palmer Salt Lake City The Eye and the General Practitioner
Leland R Cowan Salt Lake City Treatment of Cancer of the Skin
John L. Gedgoud Omaha Fluid Balance
Walter Freeman Washington D C Psychosurgery
John Gramlich Denver Art of the Biopsy
Gordon C Whiston Casper Wyo Pelvic Fractures
Henry W Meyerding Rochester Minn Giant Cell Tumors
Paul D Bruns, Denver Toxemias of Pregnancy
Francis K Burnett and Albert R. Pearce both of Cheyenne Wyo Veterans Medical Benefits at His Home Town
Gordon Meiklejohn Denver Infectious Diseases

Dr John W Cline of San Francisco President of the American Medical Association, will speak on "Public Relations" at the banquet Friday at 8 p m at the Old Timers Building The Sweetwater County Medical Society will sponsor a smorgasbord Thursday evening to which everyone is invited A stag smoker will be held at the Elks Club Wednesday evening following the scientific sessions of the International College of Surgeons The house of delegates will meet Thursday, Friday and Saturday The Woman's Auxiliary will hold its annual meeting during the State Medical meeting

GENERAL

Heart Association Grants—Sixty new grants in aid in the total amount of $311 912 have been made by the American Heart Association for research studies conducted during the 1951-1952 academic year The latest total research allocation of $478 662 by the national office represents an increase over the $416,386 appropriated the previous year, based on expanded income Among the largest of the awards made was one to the Marine Biological Laboratory at Woods Hole, Mass , of $10,000 for a study by Dr Albert Szent-Gyorgyi of molecular mechanisms in the muscle cell as a basis for understanding the nature of muscular contraction, with eventual extension of the study to the heart muscle Western Reserve University School of Medicine, Cleveland, received an $18,270 grant for a training school for research investigators in the field of heart and blood vessel diseases under Dr Carl J Wiggers

Midwest Medical Librarians Meeting.—Medical, hospital, and pharmaceutical librarians will meet at Abbott Laboratories, North Chicago, Ill , on Oct 6 for the 1951 session of the Midwest division of the Medical Library Association States represented will be Michigan, Indiana, Illinois, Wisconsin, and Minnesota Speakers will be Chicago librarians Marguerite Prime of the American College of Surgeons, H H Henkle of the John Crerar Library, Wilma Troxel of the University of Illinois Library of Medical Sciences, and Gertrude Minsk, University of Chicago biomedical libraries, and Edith Dernehl, Marquette University School of Medicine, Milwaukee, Thomas E Keys Mayo Clinic Rochester, Minn Louise Lage, assistant librarian of Lilly Research Laboratories, Indianapolis, and Edith Joannes, associate librarian of Abbott Laboratories, North Chicago

Transcriptions of Radio Series Available.—The Twentieth Century Fund announces that it has made available transcriptions of the entire radio series "The People Act" as a public service to educational institutions and radio stations and to citizen organizations for use in meetings and group discussions These transcriptions can be obtained on a free loan basis through the Federal Radio Education Committee (FREC) of the United States Office of Education, Washington, D C Each program is recorded on one double face 16 inch, 33⅓ rpm disc and can be played on any play back machine that will accommodate a 16-inch recording at the required speed The transcriptions will be sent out together with a teaching and discussion guide which gives the background of the series and the individual programs, suggests related topics for discussion, and provides a bibliography The original "The People Act' is a series of 13 half-hour programs jointly produced by the Living program unit of the National Broadcasting Company and the Twentieth Century Fund It was broadcast last winter by most of the stations in the NBC network and overseas by the Voice of America Democracy in action is the theme of the programs

Crippled Children Society Meeting.—The annual convention of the National Society for Crippled Children and Adults will be held at the Palmer House, Chicago, Oct 3 6 There will be instructional seminars on the diagnosis of cerebral palsy in the young child, physical therapy, occupational therapy, speech therapy, social and emotional adjustment special education and parent education Among others the following will conduct the seminars Dr Meyer A Perlstein secretary, American Academy for Cerebral Palsy, Chicago Dr George G Deaver medical director Lenox Hill Hospital Pre School Cerebral Palsy Center, New York, Miss Edna M Blumenthal director of rehabilitation North Carolina Hospital for Cerebral Palsy, Durham N C Dr Edward D Greenwood Menninger Foundation Topeka Kansas and Evelyn Millis Duval Ph D executive secretary National Council on Family Relations Chicago Other speakers include Dr Theodore G Klump, chairman Task Force Mobilization who will lead a panel discussion on the role of the handicapped, Miss Mary Switzer, director, United States Office of Vocational Rehabilitation, and Mr Henry Viscardi, who will participate in the panel "The Volunteer Agencies' Role," and Margaret Hickey of the *Ladies' Home Journal*, Philadelphia, who will speak on "The Inner Citadel of our Security"

Mississippi Valley Tuberculosis Society Meetings.—The Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Trudeau Society will hold their annual meetings at the Hotel Sherman, Chicago, Oct 4-6 The Oct 4 session will be a joint session of the two organizations Dr David T Smith, Durham, N C, past president of the National Tuberculosis Association, will be the featured speaker of the morning session Visual aids, public relations, and statistics will be the subjects of the afternoon public health session Friday morning the subject of the Trudeau session will be 'A Study of Cases Coming to Pulmonary Resection Including Medical, Roentgenological, Surgical, and Pathological Features", and the afternoon subjects, "Immunization with BCG," "Pathogenesis of Tuberculosis,' and 'Patient Education Regarding Tuberculosis" A clinical pathological x ray conference will be held at 8 p m Friday Subjects of the Trudeau society's Saturday morning session are the following "Management of the Silicotic Patient," "Crushing Injuries of the Chest,' 'The Rationale of Early Surgical Approach to Osseous Tuberculosis and Its Complications,' Genito-Urinary Tuberculosis," and 'The Widening Front in the Treatment of Tuberculosis"

Prevalence of Poliomyelitis—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated

Area	Sept 8 1951	Sept 1 1951	Sept 9 1950
New England States			
Maine	0	4	9
New Hampshire	4	2	2
Vermont	1		2
Massachusetts	21	19	33
Rhode Island	3		8
Connecticut	20	34	33
Middle Atlantic States			
New York	128	110	243
New Jersey	43	45	49
Pennsylvania	80	64	95
East North Central States			
Ohio	102	74	83
Indiana	22	18	20
Illinois	108	128	110
Michigan	120	98	81
Wisconsin	100	101	50
West North Central States			
Minnesota	45	35	41
Iowa	81	33	47
Missouri	33	64	13
North Dakota	4	5	
South Dakota	5	14	10
Nebraska	23	37	21
Kansas	81	62	35
South Atlantic States			
Delaware		1	2
Maryland	13	10	43
District of Columbia	7	6	10
Virginia	14	19	71
West Virginia	21	19	24
North Carolina	16	21	45
South Carolina	2	7	18
Georgia	43	30	24
Florida	8	9	19
East South Central States			
Kentucky	27	20	51
Tennessee	68	50	38
Alabama	33	24	18
Mississippi	32	81	10
West South Central States			
Arkansas	26	83	12
Louisiana	100	27	17
Oklahoma	44	27	41
Texas	73	70	91
Mountain States			
Montana	8	11	1
Idaho	10	7	7
Wyoming	13	5	1
Colorado	92	90	16
New Mexico	0	9	9
Arizona	22	86	4
Utah	44	39	3
Nevada			
Pacific States			
Washington	20	23	59
Oregon	12	19	25
California	117	148	72
Territories and Possessions			
Alaska	1	4	
Hawaii	1		1
United States	1,871	1,740	1 741

American Academy of Pediatrics.—The academy will hold its annual meeting Oct 22 25 at the Royal York Hotel, Toronto Canada, under the presidency of Paul W Beaven, Rochester, N Y The meeting will be preceded by seminars Oct 20-21 General scientific sessions are made up of the following symposiums and panels

Physiological Consideration of Respiratory Disease Julius H Comroe Philadelphia chairman James L Wilson Ann Arbor Mich Willis J Potts Chicago James L. Whittenberger Boston

The Academy Looks at Pediatric Education Lee Forrest Hill Des Moines Iowa chairman Gerald M Cline Bloomington Ill Herbert E Coe, Seattle Charles F McKhann Cleveland John McK Mitchell Philadelphia Milton J E Senn New Haven and A Ashley Weech Cincinnati

Neurological Conditions in Children Francis L McNaughton Montreal Canada, chairman William A Hawke Toronto Canada Donald S McEachern Donald L McRae Wilder G Penfield Herbert H. Jasper and James Preston Robb all of Montreal Canada.

Carbohydrate Metabolism Charles H Best Toronto Canada chairman Gerald A Wrenshall Ph D Robert C Ritchie Andrew L. Chute all of Toronto Canada Priscilla White and Elliott P Joslin of Boston and Alvah L Newcomb Winnetka Ill

The final symposium will be on Corticotropin, Cortisone, and Allied Substances and Dr Jerome W Conn, Ann Arbor, Mich., will be the chairman Among other speakers will be Professor Arvid Wallgren of the Karolinska Institute, Stockholm, Sweden, who will speak on 'Primary Tuberculosis in Childhood", Professor Stanley Graham, Royal Hospital for Sick Children, Glasgow, Scotland, "Fate of the Primary Tuberculosis Infection in Young Children," Professor James C Spence, University of Durham, Newcastle-on Tyne, England, 'Socialized Medicine in England," and Dr Louis H Bauer, Hempstead, N Y, President-elect of the American Medical Association, 'Future of Medicine" The banquet will be held Wednesday at 8 p m Round table discussions and general sessions will run concurrently

CANADA

National Immunization Week.—For the ninth consecutive year the Health League of Canada is sponsoring a Canada wide educational campaign to call to public attention the dangers of such diseases as diphtheria, whooping cough, tetanus, and smallpox, and the means for their prevention National Immunization Week will be observed Oct. 14-20 Health departments and family doctors throughout the country are able and willing to provide this protection against whooping cough and diphtheria Dr Cecil T Collins-Williams, Toronto, medical director of the Child and Maternal Health Division of the Health League, states that of contagious diseases among children under one year of age, whooping cough is the leading cause of death

MEETINGS

American Ambulatory Fracture Association Arrowhead Springs Hotel San Bernardino Calif Oct. 8-11 Dr H. W Wellmerling, 626 Griesheim Bldg Bloomington Ill Secretary

American Academy of Ophthalmology and Otolaryngology, Chicago Oct. 14-18 Dr W L. Benedict 100 First Avenue Bldg. Rochester Minn Executive Secretary

American Academy of Pediatrics Toronto Canada Oct 20-25 Dr E H Christopherson 636 Church St., Evanston Ill., Executive Secretary

American Association for the Surgery of Trauma The Seigniory Montebello Quebec Canada Oct. 23 25 Dr Charles G Johnston, 1512 St. Antoine St, Detroit 26 Secretary

American Association of Blood Banks Hotel Nicollet Minneapolis, Oct 22 24 Miss Marjorie Saunders 3301 Junius St Dallas 1 Texas, Secretary

American Cancer Society New York Oct 25 Dr Charles S Cameron 47 Beaver St. New York Medical Director

American Clinical and Climatological Association Skytop Pa., Nov 5-7 Dr Marshall N Fulton 124 Waterman St Providence R. I Secretary

American College of Surgeons Fairmont Hotel San Francisco Nov 5-9 Dr Michael L Mason 40 E Erie St., Chicago 11 Secretary

American Hospital Association St. Louis, Sept. 17 20 Mr George Bugbee 18 E. Division St. Chicago 10 Executive Director

American Public Health Association Civic Auditorium, San Francisco, Oct 29 Nov 2 Dr Reginald M. Atwater, 1790 Broadway, New York 19 Executive Secretary

AMERICAN ROENTGEN RAY SOCIETY Washington D C. Sept. 25-28 Dr Barton R Young Germantown Hospital Philadelphia 44 Secretary

AMERCAN SOCIETY FOR THE STUDY OF ARTERIOSCLEROSIS Chicago Nov 4-5 Dr O J Pollak Quincy City Hospital Quincy 69 Mass Secretary

AMERICAN SOCIETY OF ANESTHESIOLOGISTS Washington D C. Nov 5-8 Dr J Earl Remlinger Jr 188 W Randolph St. Room 909 Chicago 1 Secretary

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS Chicago Oct. 15 20 Dr Clyde G Culbertson 1040 W Michigan St. Indianapolis 7 Secretary

AMERICAN SOCIETY OF MAXILLOFACIAL SURGEONS Drake Hotel Chicago Sept 23 26 Dr Casper M Epsteen 25 E. Washington St. Chicago 2 Secretary

AMERICAN SOCIETY OF TROPICAL MEDICINE. Congress Hotel Chicago Nov 15 17 Dr Quentin M Geiman, 25 Shattuck St Boston 15 Secretary

ASSOCIATION OF AMERICAN MEDICAL COLLEGES French Lick Springs Hotel French Lick Ind Oct 29 31 Dr Dean F Smiley 185 N Wabash Ave *Chicago 1 Secretary*

ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA New York Oct. 11 12 Dr Henry B Kirkland P O Box 594 Newark 1 N J Secretary

ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES Palmer House Chicago Oct. 8 10 Colonel James M Phalen Armed Forces Institute of Pathology Washington 25 D C Secretary

CENTRAL NEUROPSYCHIATRIC ASSOCIATION Hotel Nicollet Minneapolis, Oct 19 20 Dr Lee M Eaton 102 Second Ave S W Rochester Minn. Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH Drake Hotel Chicago Nov 2 3 Dr Kenneth G Kohlstaedt 960 Locke St. Indianapolis 7 Secretary

COLLEGE OF AMERICAN PATHOLOGISTS Chicago Oct. 15 16 Dr Tracy B Mallory Massachusetts General Hospital Boston Secretary

DELAWARE, MEDICAL SOCIETY OF Wilmington Oct. 8 10 Dr Andrew H. Gehret 1007 Park Place Wilmington Secretary

DISTRICT OF COLUMBIA MEDICAL SOCIETY OF THE, Hotel Statler Washington Oct. 1 3 Mr Theodore Wiprud 1718 M St. N W Washington Secretary

GULF COAST CLINICAL SOCIETY Edgewater Gulf Hotel Edgewater Park, Miss. Oct. 18 19 Dr C D Taylor 113 Davis Ave Pass Christian, Miss Secretary

INDIANA STATE MEDICAL ASSOCIATION Indianapolis Oct 29 31 Miss Lucille Kribs 23 E Ohio St Indianapolis 4 Acting Secretary

INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, St Louis Oct 22 26 Dr Tom B Throckmorton Equitable Bldg Des Moines Iowa Secretary

KANSAS CITY SOUTHWEST CLINICAL SOCIETY Municipal Auditorium Kansas City Mo Oct 1-4 Dr Maxwell G Berry 630 Shukert Bldg Kansas City Mo Director of Clinics.

KENTUCKY STATE MEDICAL ASSOCIATION Columbian Auditorium Louisville Oct. 2 5 Dr Bruce Underwood 620 S Third St. Louisville 2 Secretary

MICHIGAN STATE MEDICAL SOCIETY Grand Rapids Sept 26-28 Dr L. Fernald Foster 606 Townsend St. Lansing 15 Secretary

MIDWEST REGIONAL MEETING AMERICAN COLLEGE OF PHYSICIANS Columbus Ohio Oct. 13 Dr B K Wiseman Kinsman Hall Ohio State University Columbus 10 Ohio Chairman

NASHVILLE POSTGRADUATE MEDICAL ASSEMBLY Maxwell House Nashville Tenn Oct. 3 5 Dr W G Kennon Jr 647 Doctors Bldg Nashville 3 Secretary

NEW HAMPSHIRE MEDICAL SOCIETY Equinox House Manchester Vermont Sept 30-Oct 2 Dr Deering G Smith 44 Chester St. Nashua Secretary

NORTH PACIFIC SURGICAL ASSOCIATION Vancouver B C Canada Nov 16-17 Dr J A Duncan 509 Olive Way Seattle Wash Secretary

OKLAHOMA CITY CLINICAL SOCIETY Biltmore Hotel Oklahoma City Oct 29-Nov 1 Mrs Muriel R. Waller 612 Medical Arts Bldg Oklahoma City Executive Secretary

OMAHA MID-WEST CLINICAL SOCIETY Hotel Paxton Omaha Oct. 29 Nov 2 Dr L. E Moon 1031 Medical Arts Bldg Omaha 2 Secretary

OREGON STATE MEDICAL SOCIETY Masonic Temple Portland Oct 10-13 Dr Robert F Miller 833 S W Eleventh Ave Portland 5 Secretary

SOUTHERN MEDICAL ASSOCIATION Dallas Texas, Nov 5-8 Mr C P Loranz, 1020 Empire Bldg Birmingham 3 Ala Secretary

SOUTHWESTERN MEDICAL ASSOCIATION El Paso Texas Oct 18-20 Dr W W Schuessler 1415 First National Bank Bldg El Paso Texas Secretary

SOUTHWESTERN SURGICAL CONGRESS Hotel Jefferson St Louis Sept. 24-26 Dr C. R Rountree 1227 Classen St Oklahoma City 3 Secretary

VERMONT STATE MEDICAL SOCIETY Equinox House Manchester Sept 30-Oct. 2. Dr James P Hammond 542 Main St. Bennington Secretary

VIRGINIA MEDICAL SOCIETY OF Virginia Beach Oct 7 10 Mr Richard H Nash 1105 W Franklin St Richmond Executive Secretary

WISCONSIN STATE MEDICAL SOCIETY OF Hotel Schroeder and Milwaukee Auditorium, Milwaukee Oct. 1 3 Mr Charles H Crownhart 704 E. Gorham St Madison 3 Secretary

WYOMING STATE MEDICAL SOCIETY Rock *Springs, Sept* 27 29 Dr Glenn W Koford 2020 Carey Ave., Cheyenne Secretary

INTERNATIONAL

COMMONWEALTH AND EMPIRE HEALTH AND TUBERCULOSIS CONFERENCE Central Hall London England July 8 13 Dr J H Harley Williams Tavistock House North Tavistock Sq London W C 1 England Secretary General

EUROPEAN CONGRESS OF HEMATOLOGY Rome, Italy Oct 3-6 Dr Sven Moeschlin Mediz Klinak, Zurich Switzerland General Secretary

EUROPEAN CONGRESS ON RHEUMATISM Barcelona, Spain Sept. 24-27 Dr Gunnar Edström, Lund Sweden Secretary

INTER AMERICAN CONGRESS OF SURGERY Buenos Aires, Argentina Oct 1-6

INTERNATIONAL ASSOCIATION OF ALLERGISTS Zurich Switzerland Sept. 23 29 Prof A S Grumbach Hygiene Institut der Universitaet Zurich Gloriastr 32, Zurich Switzerland.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City Mexico Dec. 11 19 Mrs. Grace E O Neill Division of World Affairs National Association on Mental Health 1790 Broadway New York 19 N Y

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE London England July 14-19 Dr A C Boyle, 45 Lincoln s Inn Fields London W C.2, England Hon Secretary

INTERNATIONAL SOCIETY OF SURGERY Paris, France Sept. 24-29 Dr L. Dejardin 141 rue Belliard Brussels, Belgium Secretary General

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY Mexico City Mexico Jan 6-12. Dr Luis Sanchez Bulnes Gomez Farias 19 Mexico 4 D F Secretary-General

PAN AMERICAN CONGRESS OF PEDIATRICS Montevideo Uruguay Dec 5-8 Dr Maria Luisa Saldien de Rodriguez, Avenida 18 de Julio 1246 Montevideo Uruguay General Secretary

PAN PACIFIC SURGICAL ASSOCIATION CONGRESS Honolulu Hawaii Nov 7 19 Dr Forrest J Pinkerton Suite 7 Young Bldg. Honolulu Hawaii President.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Oral* Memphis Oct 14-17 Sec., Dr Curtiss B Hickcox 80 Seymour St Hartford 15 Conn

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written* Chicago March 1952 *Oral* Chicago May 1952 Final date for filing application is Feb 1 1952. Sec Dr George M Lewis 66 E. 66th St New York 21

AMERICAN BOARD OF INTERNAL MEDICINE *Written.* Various centers Oct 15 Final date for filing applications was May 1 *Oral* The schedule of oral examinations for 1951 has been arranged on a regional basis as follows New York Nov 12 15 covering Maine Massachusetts New Hampshire New York and Vermont San Francisco Oct 22 24 covering Arizona California Colorado Idaho Montana Nevada New Mexico Oregon Utah Washington and Wyoming Final date for filing applications was Sept 1

Oral examinations in the subspecialties will be held at the same time and place and on the same distribution.

Exec Sec Dr William A Werrell 1 W Main St Madison 3

AMERICAN BOARD OF NEUROLOGICAL SURGERY *Oral* Chicago Oct 25 26 *Oral* Chicago May 1952 Final date for filing applications for the May 1952 examination is Jan 1 1952. Sec Dr W J German 789 Howard Ave New Haven 4 Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written* Feb 1 1952. Final date for filing applications is Nov 1 *Oral* Chicago June 7 13 1952. Final date for filing application is Feb 1 1952 Sec Dr Robert L. Faulkner 2105 Adelbert Road Cleveland 6

AMERICAN BOARD OF OPHTHALMOLOGY *Written* Twenty five centers Feb 4-5 1952. *Oral* Chicago October 8 13 Sec Dr Edwin B Dunphy 56 Ivie Road Cape Cottage Maine

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Final date for filing applications for the 1952 Part II examinations is Nov 30 1951 Sec Dr Harold A Sofield 122 S Michigan Ave Chicago 3

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Chicago Oct. 8-12 Sec Dr Dean M Lierle University Hospital Iowa City

AMERICAN BOARD OF PEDIATRICS *Oral* Buffalo Oct 26-28 Ex. Sec Dr John McK Mitchell 6 Cushman Rd Rosemont Pa

AMERICAN BOARD OF PLASTIC SURGERY Denver Oct 27 29 Final date for filing of case reports was Aug 30 Sec Dr Bradford Cannon Office of the Board 4647 Pershing Ave St Louis 8

AMERICAN BOARD OF PREVENTIVE MEDICINE *Written* San Francisco October 28 *Oral* San Francisco October 29 Sec., Dr Ernest L. Stebbins 615 North Wolfe St Baltimore 5

AMERICAN BOARD OF PROCTOLOGY Philadelphia Nov 17 18 Sec Dr Louis A Buie 102 110 Second Ave S W Rochester Minn

AMERCIAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral* New York Dec 17 18 Final date for filing applications was Sept. 1. Act Sec Dr David A Boyd Jr., 102 110 Second Ave., S W Rochester Minn.

AMERICAN BOARD OF SURGERY *Written* Various centers, Oct 1951 Final date for filing applications was July 1 *Written* Various Centers March 1952 Final date for filing application is Dec 1 1951 Sec Dr J Stewart Rodman 225 S 15th St Philadelphia

BOARD OF THORACIC SURGERY *Oral* St. Louis Nov 2 Sec Dr William M Tuttle 1151 Taylor Ave., Detroit 2 Mich

AMERICAN BOARD OF UROLOGY Chicago Feb 9-11 [illegible] Final date for filing applications is Sept 1 Sec Dr Harry Culver 10 Westwood Rd Minneapolis 16

DEATHS

Garrey, Walter Eugene, Nashville, Tenn , born in Reedsville, Wis , April 7, 1874, received his Ph D degree from the University of Chicago in 1900, and his medical degree from Rush Medical College, Chicago, 1909, extension instructor in zoology at the University of Chicago from 1894 to 1898 and fellow in physiology from 1898 to 1900, professor of physiology at Cooper Medical College, San Francisco, from 1900 to 1910, associate professor of physiology at Washington University in St Louis from 1910 to 1916, professor of physiology at Tulane University in New Orleans from 1916 to 1925, became professor of physiology at Vanderbilt University School of Medicine in 1925, and was professor emeritus there from 1944 to the time of his death, lecturer in general physiology, member of the research staff, and member of the board of trustees of the Marine Biological Laboratory at Woods Hole, Mass , member of the National Board of Medical Examiners from 1922 to 1934, member at large in the medical division and member of the executive committee in the biological division, National Research Council, member, American Association for the Advancement of Science, and the American Society of Biological Chemists, past president of the American Physiological Society and honorary member of the San Francisco Academy of Medicine, vice chairman of the Section on Pathology and Physiology of the American Medical Association in 1935-1936 and chairman in 1937, member of the Council on Physical Medicine and Rehabilitation of the American Medical Association since 1927, having been chairman of the Council s Committee on Scientific Research, published numerous reports on research in various fields of physiology, died June 15, aged 77, of carcinoma of the bladder

Harper, Cornelius A ⊕ Madison, Wis , born near Hazel Green, Wis , Feb 20, 1864, Columbian University Medical Department, Washington, D C , 1893, appointed to the state board of health in 1901 and made state health officer in 1904, carried forward a program of disease prevention, promoted health legislation and expanded the department, in 1943 resigned as state health officer but was retained as medical specialist in public health, prepared an authoritative history of public health in Wisconsin, being an actual compilation of the minutes of the state board of health since its inception in 1876, member of the House of Delegates of the American Medical Association in 1914, honorary life member of the American Social Hygiene Association and the Conference of State and Provincial Health Authorities of North America, of which he was president in 1908, past president of the Dane County Medical Society, and in 1931 president of the State Medical Society of Wisconsin, served as secretary of the Wisconsin Anti-Tuberculosis Association, in 1930 received the council award of the state medical society for meritorious service and in 1943 a citation for distinguished service, member of the American Public Health Association, awarded the honorary degree of doctor of science from Lawrence College, Appleton, in 1941 and an honorary degree of doctor of laws from the University of Wisconsin in 1945, died June 26, aged 87, of coronary occlusion

Bagby, Bathurst Browne, Edwardsville, Va , born in Stevensville, Va , June 3, 1879, George Washington University School of Medicine, Washington, D C , 1904, member of the American Medical Association, at one time health officer of Henrico and Southampton counties, for many years director of the state bureau of maternal and child health, served as chief health officer and epidemiologist of the city of Richmond on a temporary basis, retiring in June 1941, during World War II served as civil defense director of Northumberland County, past president of the Virginia Public Health Association, died July 6, aged 72, of coronary occlusion

Abersold, George William ⊕ Wheeling, W Va , College of Physicians and Surgeons, Baltimore, 1913, fellow of the American College of Surgeons, served during World War I, affiliated with Ohio Valley General Hospital, died July 26, aged 68, of coronary occlusion

Allen, Granville Stevens ⊕ Lawrence, Mass , Bellevue Hospital Medical College, New York, 1894, served during World War I, for many years on the staff of Lawrence General Hospital, died July 13, aged 84, of coronary thrombosis

Anderson, Hascal Blount ⊕ Watervliet, Mich , College of Medical Evangelists, Loma Linda and Los Angeles, 1932 served with the Indian Service, on the staffs of St Joseph, Mich , Hospital and Community Hospital in Watervliet, died in Mercy Hospital, Benton Harbor, July 20, aged 56, of hepatitis and cardiac decompensation

Barnes, Albert Coombs, Merion Station, Pa , University of Pennsylvania Department of Medicine, Philadelphia, 1892, author of many volumes on art, president of the Barnes Foundation, killed July 24, aged 79, in an automobile accident

Bartlett, Percy, Hanover, N H , Dartmouth Medical School, Hanover, 1900, member of the American Medical Association, professor of surgery at his alma mater from 1915 to 1939, when he became professor of surgery emeritus, fellow of the American College of Surgeons, served during World War I, for many years on the staff of the Mary Hitchcock Memorial Hospital, where he died July 6, aged 80, of cerebral hemorrhage due to arteriosclerosis

Bass, Leopold, Brooklyn, University of Dorpat Faculty of Medicine, Russia, 1894, affiliated with Maimonides Hospital, died July 16, aged 84, of hypertensive heart disease

Battle, James Fitzgerald ⊕ Seattle University of Georgia School of Medicine, Augusta, 1923, affiliated with Providence, Columbus and Doctors hospitals, died July 26, aged 58, of coronary occlusion

Becker, Charles Frederick ⊕ Camden, N J Jefferson Medical College of Philadelphia, 1915 specialist certified by the American Board of Psychiatry and Neurology served in France during World War I, on the faculty of his alma mater from 1922 to 1945, on the staff of Cooper Hospital, died in the U S Naval Hospital, Philadelphia July 23, aged 60, of carcinoma of the prostate with bone metastases.

Brown, Wilson C., Newberry, S C , Medical College of South Carolina, Charleston, 1888, died July 1, aged 90, of coronary occlusion

Cawthon, Edly Wilkerson, Plateau, Ala , University of Alabama School of Medicine, Mobile, 1908, member of the American Medical Association, fellow of the American College of Surgeons, affiliated with City Hospital in Mobile, died June 9, aged 77, of hypertensive cardiovascular disease

Cogger, Thomas Walter, Anna, Ill , Loyola University School of Medicine, Chicago, 1919, served during World War I, on the staff of the Anna State Hospital, formerly affiliated with Newberry (Mich) State Hospital, died in St Johns Hospital, St Louis, recently, aged 57, of carcinoma of the esophagus

Dodds, Susan L. Koons, Long Beach, Calif , College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, formerly a medical missionary in China, died July 6, aged 77, of carcinoma of the breast

Drake, Daniel Edgar, Newfoundland, N J , University of Vermont College of Medicine, Burlington, 1889 member of the American Medical Association, president of the board of health, affiliated with Idylease Sanatorium for many years, died in Franklin (N J) Hospital July 19, aged 87, of arteriosclerotic heart disease

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⊕ Indicates Fellow of the American Medical Association

Heinen, Gustaf Frederick ⊕ Toledo, Ohio, Baltimore Medical College, 1902, died in St Luke's Hospital July 6, aged 79, of Parkinson's disease

Hipke, William, Marshfield, Wis , College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1891, member of the American Medical Association, died in Rogers Memorial Sanitarium, Oconomowoc, recently, aged 86 of arteriosclerosis

Hudson, Leo Arthur, Lancaster, Wis , University of Wisconsin Medical School, Madison, 1928 member of the American Medical Association co-owner of the Lancaster General Hospital, died May 26, aged 58, of coronary thrombosis

Hyde, Harold Valmore, Boston Harvard Medical School, Boston, 1914, member of the American Medical Association, formerly on the faculty of Tufts College Medical School, fellow of the American College of Surgeons, on the staff of the Boston City Hospital, died June 21, aged 63

Jones, George Pierce, Memphis, Tenn , Vanderbilt University School of Medicine, Nashville, 1902, died June 7, aged 73, of cerebral hemorrhage

Kemble, Earl Wallace, Golden, Colo , University of Colorado School of Medicine, Denver, 1913, member of the American Medical Association, died June 27, aged 61, of heart block

Levitch, Isaiah B , New York, Universitat Basel Medizinische Fakultat, Switzerland, 1906, member of the American Medical Association, died in Mount Sinai Hospital May 30, aged 70, of acute myocardial infarction

Morton, John R., San Marcos, Texas (licensed in Texas under the Act of 1907), in 1936 president of the Hays Blanco Counties Medical Society, died recently, aged 88 of chronic myocarditis

Planche, L. Stuart ⊕ New Rochelle, N Y , McGill University Faculty of Medicine, Montreal, Canada, 1921, member of the American Academy of Dermatology and Syphilology, specialist certified by the American Board of Dermatology and Syphilology, served in the British Navy during World War I, affiliated with New Rochelle Hospital, died in St John s Riverside Hospital in Yonkers, July 12, aged 55, of coronary thrombosis

Ploucher, William Allen, Upper Montclair, N J , Hahnemann Medical College and Hospital of Philadelphia, 1896, died recently, aged 78, of carcinoma of the prostate

Purcell, Edward, Oakland, Calif , University of Oregon Medical School, Portland, 1911, member of the American Medical Association, formerly city physician, served in France during World War I, affiliated with the Herrick Memorial Hospital, Berkeley, where he died July 7, aged 68, of coronary occlusion

Pyle, John Sherman, Toledo, Ohio, Bellevue Hospital Medical College, New York, 1886 formerly trustee of the University of Toledo affiliated with St Luke s Hospital, died July 7, aged 86, of carcinoma of the prostate

Richardson, Harold Edward ⊕ St Paul, born in Stevens Point, Wis , Feb 17, 1895 University of Minnesota Medical School, Minneapolis, 1920 specialist certified by the American Board of Internal Medicine, member of the Central Society for Clinical Research fellow of the American College of Physicians on the faculty of his alma mater, affiliated with Gillette State Hospital for Crippled Children, St Joseph s, St Luke s, and Ancker hospitals and the Charles T Miller Hospital, where he died June 18, aged 56, of coronary occlusion

Roth, John LeRoy ⊕ Conshohocken, Pa , Hahnemann Medical College and Hospital of Philadelphia, 1918 served on the staffs of Montgomery, Norristown State and Sacred Heart Hospitals in Norristown, died June 21, aged 72, of coronary thrombosis

Sarjeant, George Evans, Jacksonville, Fla Leonard Medical School, Raleigh, N C., 1911, died June 14, aged 66, of cardiovascular disease and nephritis

Shuman, Jesse Elmer ⊕ Bloomsburg Pa , University of Pennsylvania Department of Medicine Philadelphia 1891, past president of the Columbia County Medical Society for many years served on the school board associated with Bloomsburg Hospital, died recently, aged 81, of complications which developed after a fall

Snipes, James Johnston, Glendale, Calif Medical Department of Tulane University of Louisiana, New Orleans, 1903 for many years practiced in Lincoln, Neb served during World Wars I and II, member of the Sons of the American Revolution and president of the Nebraska chapter for two years, died June 14 aged 71, of coronary sclerosis

Sutton, Richard John, Oakley, Idaho, Chicago College of Medicine and Surgery, 1913 member of the American Medical Association died June 3 aged 66, of heart disease.

Tapley, Thomas Sumner, Tremont, Maine, University of Vermont College of Medicine, Burlington, 1899, died in McKinley June 16, aged 82

Thayer, Lewis Gilmore, Grants Pass, Ore Gross Medical College, Denver, 1900, died in Portland June 25, aged 83, of arteriosclerosis

Thomas, George Henry, Minneapolis, Harvard Medical School, Boston, 1895, member of the American Medical Association, died June 3, aged 82.

Thompson, Lillian Marcelletto ⊕ Chicago the Hahnemann Medical College and Hospital Chicago, 1909, died June 14, aged 77, of coronary occlusion

Trowbridge, Charles Henry, Spokane, Wash , College of Physicians and Surgeons, medical department of Columbia College, New York, 1894 died in Spokane Sanitarium June 2, aged 91, of arteriosclerosis

Ursich, Joseph Ansel, Milwaukee, Northwestern University Medical School, Chicago, 1948, served a residency at Milwaukee County Hospital, died June 22, aged 25, of poliomyelitis

Valentine, Aloysius W., Washington, D C , University of Maryland School of Medicine, Baltimore, 1904, member of the American Medical Association, died in Baltimore July 5, aged 76 of arteriosclerotic cardiovascular disease

Van Zanten, Wesley William ⊕ Sheboygan, Wis , Marquette University School of Medicine, Milwaukee, 1931, for many years county coroner, died June 4, aged 47, of coronary occlusion

Wallace, James Henry, Youngstown, Ohio, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, member of the American Medical Association, died recently, aged 74

Wasson, Guy Thornton, Bucyrus, Ohio, Eclectic Medical Institute, Cincinnati, 1903, member of the American Medical Association, past president of the Ohio Public Health Association, for many years county health officer; died June 11, aged 72.

Wellman, Harrison M , St. Petersburg, Pa , University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1916, member of the American Medical Association, past president of the Clarion County Medical Society, for many years member of St Petersburg Richland school board and the Clarion County school board and was a past president of both organizations, served four terms as county coroner, died in the Western Pennsylvania Hospital, Pittsburgh, June 7, aged 62

White, John W., Atlanta, Ga , Atlanta Medical College, 1891, served as a member of the Fulton County Lunacy Commission, died June 28, aged 88, of arteriosclerotic heart disease

White, Orton Eugene ⊕ Angola, N Y , University of Buffalo School of Medicine, 1912, specialist certified by the American Board of Otolaryngology, died in Buffalo General Hospital July 18, aged 62, of arteriosclerotic heart disease

Wolin, Benjamin Maurice ⊕ Chicago Bennett Medical College, Chicago 1915, served during World War I, died July 7, aged 61, of bronchogenic carcinoma

Worthman, Edward H., Louisville, Neb John A Creighton Medical College, Omaha 1900 died May 29, aged 76 of cardiac decompensation and cirrhosis of the liver

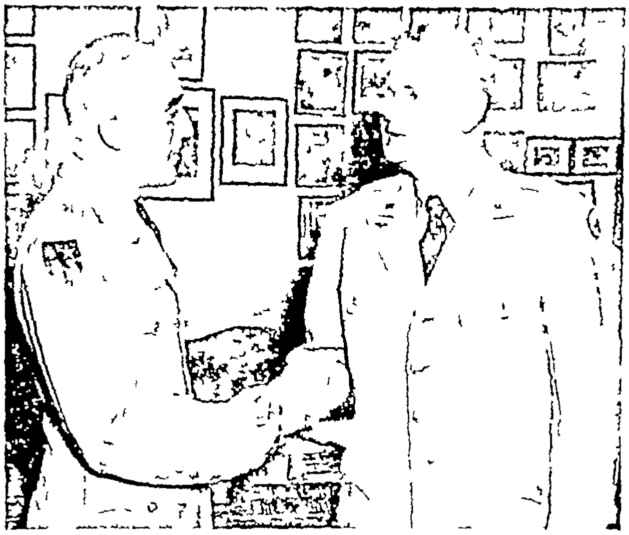
Yates, Charles Everett ⊕ Baldwin City, Kan College of
cians and Surgeons of Chicago School of Medicine of
versity of Illinois 1904, served during World War
affiliated with the Indian Service, died June 30, a
cinoma of the liver

GOVERNMENT SERVICES

ARMY

Brigadier General Hays Named Deputy Surgeon General.—Brig Gen Silas B Hays, MC, on Aug 24 assumed his duties as Deputy Surgeon General of the Army following a brief ceremony in the office of Maj Gen George E Armstrong, the Surgeon General He succeeds Brig Gen Paul I Robinson who will take command of Fitzsimons Army Hospital at Denver, Colo

In his last assignment as Surgeon of the Japan Logistical Command, General Hays was responsible for management of Army hospitals in Japan, the evacuation of all casualties from Korea, and the furnishing of medical supplies and equipment for both Japan and Korea During World War II General Hays served as chief of medical supply for the European Theater He was awarded the Legion of Merit with Oak Leaf Cluster, the Croix de Guerre with Palm, and the Order of Santé Publique from France for his work in that country On his return to the United States, he was appointed chief of the supply division, Office of the Surgeon General, where he remained until his assignment to the Far East Command in May 1950



The new Deputy Surgeon General of the Army Brig Gen Silas B Hays MC, is congratulated on his appointment by Maj Gen George E. Armstrong Surgeon General.

New Foot Powder to Prevent Cold Injuries—Army medical research has developed a new foot powder that reduces foot perspiration, offering partial protection against cold injuries to troops living or fighting in cold weather areas, the Department of the Army announced recently Arctic tests have shown according to Maj Gen George E Armstrong, Army Surgeon General, that the foot powder reduces sweating by as much as 24% This development is of major importance to troops in a cold environment because cold injury more frequently involves the feet than any other extremity Trenchfoot develops in wet cold, whereas frostbite is associated with 'dry cold" Man s feet perspire under almost all conditions, but the secretion of the sweat glands is especially harmful in cold weather because crystallized particles of perspiration act as conductors of cold, thereby diminishing the insulative value of winter footwear By reducing foot sweating, the new powder will make the winter soldier's heavy socks and boots more effective against cold injury

The new preparation has a powdered talc base and contains aluminum chloride and potassium alum, the anhidrotic agents, well as boric acid, salicylic acid and starch The initial ship- of the powder will be delivered to the Army this fall and will be issued to troops assigned in cold weather areas including those in Korea The powder will be packaged in seven separate envelopes contained in one heat sealed cellulose kit This is a soldier s one week supply Troops will be instructed in its use

Additional research, using a combination of a rubber barrier sock and the new foot powder, has shown a 60% reduction in perspiration A new type rubber boot is being developed that will embody the principle of the rubber barrier sock to eliminate the extra rubber type sock It will be used in combination with the foot powder The foot powder alone is intended to be used where the military situation permits a daily change of socks and shoes

Recovery Rate High In Korea Soldiers.—Back from a Korean inspection trip, Army Surgeon General George Armstrong reports that early first aid is a major factor in the high recovery rate Only 25 men out of every 1,000 now die of their wounds, in contrast to the World War II rate of 45 in every 1,000

Work of the litter bearers is complicated by the rugged terrain, Surgeon General Armstrong said The average trip by litter to an aid station requires one and one half hours, although during the recent heavy fighting in the mountainous eastern front six hour trips were not unusual, with eight men assigned to each litter

He said he questioned more than 150 recently wounded men on how soon they received first aid 'Every one,' the Surgeon General reported, "said right away and seemed puzzled at the question The only occasions I was able to learn about when men were unattended for 30 minutes or more were explained by the fact the aid man assigned to the unit was himself killed or wounded '

General Armstrong praised the line officers for the support they are giving the medical department Now, when men are supposed to get suppressive drugs or other regular medication we know they get it," he said As an example of the attitude of commanding officers, General Van Fleet has ordered that every electric fan in Korea be used to make patients more comfortable "

Of the wounded, Surgeon General Armstrong said that 26% return to duty without leaving Korea and 61% without leaving Japan An additional 14% are able to return to duty after hospitalization in the United States. Even a few amputees are sufficiently rehabilitated to return to duty

Surgeon General Armstrong is hopeful that the new drug primaquine may be found to be a cure for malaria as well as a suppressive He said recent outbreaks of the disease among Korea veterans is not as serious as it might be because of effective and prompt detection and treatment in this country

Medical Personnel Win Decorations in Korea.—A preliminary survey reveals that over 2 800 decorations have already been awarded to Army Medical Service personnel for service in the Korean campaign, Maj Gen George E Armstrong, Army Surgeon General, announced Aug 28 The total includes a posthumous award of the Medal of Honor to Private Richard C Wilson, aid man with the 187th Airborne Infantry Regiment, 9 Distinguished Service Crosses, 2 Distinguished Service Medals, 149 Silver Stars, 28 Legion of Merit awards 2 Distinguished Flying Crosses 11 Soldier s Medals, 1,369 Bronze Star Medals, 9 Air Medals, 126 Commendation Ribbons, and 1,110 Purple Hearts Eighty five per cent of the decorations were awarded to Army Medical Service enlisted men Medical Service Corps officers serving as assitant battalion surgeons, administrators, supply officers or in similar capacities, received almost 10% of the total Medical Corps officers received 105 decorations, including 1 Distinguished Service Cross, 2 Distinguished Service Medals, 7 Silver Stars, 18 Legion of Merit awards, 59 Bronze Star medals 8 Air Medals, 6 Commendation Ribbons, and 4 Purple Hearts

The tabulation was based on records now on file in the Adjutant General's Office and it is necessarily incomplete since new data arrives periodically from the Far East Command where the decorations are either awarded or authorized

Walter Reed Centennial.—Brig. Gen Sam F Seeley made the principal address at 'Walter Reed Night," celebrated Sept 1, by the 'Faith of our Fathers" pageant, the Sesquicentennial Commission s outdoor presentation in Washington, D C The occasion marked the opening of events scheduled to honor the 100th anniversary of the birth of Maj Walter Reed, famed conqueror of yellow fever, who was born Sept 13, 1851, at Belroi, Va General Seeley, MC, is chief of Walter Reed Hospital s surgical service

NAVY

109th Anniversary for Bureau of Medicine and Surgery.—The 109th anniversary of the Navy's Bureau of Medicine and Surgery was observed on Friday, Aug 31 The bureau can point to an impressive list of accomplishments since its establishment by an Act of Congress in 1842 Today the Navy operates modern, fully equipped, air conditioned hospital ships in support of sea and land operations All Navy ships carry a representative of the Medical Department, ranging from an enlisted hospital corpsman, qualified for duty independent of a medical officer, aboard a mine sweeper to the medical officer staffed aircraft carrier with its modern operating room Ten per cent of the Navy medical officers on active duty have been certified in various specialties by American Boards, and hospital corpsmen are trained in 40 technical specialties allied to medicine Navy flight nurses are stationed around the world

Through continuing efforts of the bureau to improve the skill and efficiency of its personnel, new concepts of naval medicine are being developed Several advances were shown for the first time in Korea the mobile surgical teams, epidemic disease control units operating with the fleet and in the field with the Marine Corps, and lighter, more compact field equipment Another facet, the Occupational Health Service Program to promote and conserve the health of the employees of the Navy's industrial establishments, has proven beneficial production wise

The Medical Department's record of caring for the sick and injured, its contributions to the art and science of medicine, and the personal sacrifices and valor of its personnel make up an outstanding page in naval history

Seven years ago while serving as Chief of Surgery at the San Diego Naval Hospital, the present Surgeon General Rear Adm Lamont Pugh, observed that, 'men as well as ships need a haven for repair Today, the Navy s Hospital Expansion Program echoes this statement

Surgeon General Honored by International College of Surgeons—The Surgeon General of the Navy, Rear Adm Lamont Pugh, MC, USN has been selected as an Honorary Fellow of the International College of Surgeons The diploma and insignia of the college were conferred on him at the 16th Annual Assembly of the United States and Canadian Chapters of the International College of Surgeons held at the Palmer House, Chicago, Sept 10-13

The letter of notification to Admiral Pugh stated, It was the wish of our Board and our membership that you be so honored because of your many contributions to the art and science of surgery and your constant efforts in advancing the ideals of our great profession "

Send Representative to Industrial Medical Congress.—Capt Robert W Babione, MC, USN, director of the preventive medicine division, represented the Navy at the 10th International Congress of Industrial Medicine held Sept 9 15 at Lisbon, Portugal The Congress was sponsored by the Permanent Industrial Commission for Industrial Medicine with headquarters at Geneva, Switzerland

Upon termination of the congress Captain Babione made a brief visit to the Naval Medical Research Unit at Cairo, Egypt

First Editor of Armed Forces Medical Journal Retires.—Capt Joseph L Schwartz, Medical Corps USN, formerly of 8203 Grubb Rd Silver Spring, Md, will be placed on the retired list of the Navy on Sept 1, after completion of more than 31 years of active military service in the Medical Corps of the Navy During this time he has held a variety of important posts including the editorship of the U S Armed Forces medical journal to which he was appointed in January 1950

AIR FORCE

Human Factors in Flight—New studies of the airman s reactions to high speed, high altitude, and strange environments are badly needed in the Air Force, Col Adolph P Gagge director of research in the Surgeon General's office, told a group of military and civilian scientists assembled in San Antonio, Texas, Aug 27-29 The meeting of specialists from universities all over the United States and Canada was held under the joint auspices of the School of Aviation Medicine and the office of the Air Force Surgeon General to plan a research program in the field of psychophysiology

"During the last years of the war," said Colonel Gagge, 'while aircraft development in jets and rockets made tremendous progress, research in the effects produced by these craft on the men who fly them fell far behind, because scientific brains had to be diverted to more immediate problems For several years after the war, Air Force research was restrained by the policy of strict military economy then in effect Now we are urgently in need of answers to the questions of human tolerance raised by present-day flight "

Five broad areas of investigation demand research, Colonel Gagge added These are the following the care and treatment of flying personnel in modern warfare, results of extreme speed and altitude, conditions found in special environments such as the stratosphere or beyond it, in outer space flying safety and the effects of new weapons and unusual methods of warfare All these, said Colonel Gagge, are fruitful fields of study for psychophysiologists, who deal with the peculiar reactions of the central nervous system to rare and unexpected circumstances encountered in flight

The conference opened with a welcoming address by Col Paul A Campbell director of research at the School of Aviation Medicine Presiding was Clifford T Morgan, Ph D, chairman of the department of Psychology at Johns Hopkins University in Baltimore Also present were more than a dozen noted civilian specialists as well as additional representatives of the Surgeon General s office, the School of Aviation Medicine, and the Aero Medical Laboratory at Wright Patterson AFB in Dayton, Ohio

School of Aviation Medicine Increases Output—With the expanding U S Air Force impatient for medical officers trained as specialists in aviation medicine, the Air Force School of Aviation Medicine went into high gear and during the past 12 months graduated or enrolled more than 500 Aviation Medical Examiners In Air Force units, their primary duty will be to conduct physical examinations for flying On graduation of the current class, which enrolled on Aug 27, the figure will be well beyond the 500 mark

Doctors from 72 accredited medical schools in 38 states and the District of Columbia were trained at the School of Aviation Medicine during the scholastic year ending Aug 31 This was revealed in a recent survey by Dr Glenn L. Lembke, director of education at the aeromedical school

In addition, seven foreign nations sent medical officers to the U S Air Force school during the same period These included England Uruguay, Switzerland the Philippine Republic, Iran Egypt and Nicaragua

A large majority of the students were reserve officers of the Air Force Medical Corps called to extended active duty due to the nation s rapid military expansion The regular Air Force, however, and the Air National Guard were well represented in the eight Aviation Medical Examiner classes enrolled between Sept 1, 1950 and 1951

New Assignments.—Lt Col James W Humphreys Jr has been assigned chief of the general surgical section, USAF Hospital Wright Patterson Air Force Base, Dayton, Ohio He came from Fitzsimons Army Hospital, Denver, where he completed three years residency in surgery Colonel Humphreys saw action in the European theater as commanding officer of the 430th Medical Battalion and the 30th Medical Group He was later assigned as staff surgeon to the U S Military Mission Iranian Army, Teheran Iran. He has received the Iranian award for duty in Iran and the Legion of Merit He succeeds Lt Col Voris F McFall, who has been assigned as base surgeon at Norton Air Force Base, San Bernadino, Calif

FOREIGN LETTERS

ITALY

International Scientific Symposium—An important international scientific symposium, the first since the end of World War II, was held during the past weeks in the Siculorum Gymnasium, which today is the University of Catania Speakers were W H Schopfer (director of the Institute of Botany and Biology of the University of Bern), C Lian (director of the medical clinic of the Hôpital de la Pitié of Paris), J Courtois (director of the Institute of Pharmacology of the University of Paris), A Gigon (director of the medical clinic of the University of Basel), and C Jiménez Diaz (director of the medical clinic of the University of Madrid) Among the Italians attending were L Condorelli (dean of the faculty of medicine of the University of Catania), P Di Mattei (faculty of medicine of the University of Rome), and G C Pupilli (director of the Institute of Human Physiology of the University of Bologna)

ANTAGONISM BETWEEN VITAMINS

It is well known that there are complicated interrelations between the factors of nutrition Woods demonstrated that the bacteriostatic action of the sulfonamides is due to a mechanism of interference and antagonism among vitamins essential to the bacteria It was also demonstrated that avitaminosis in man is not always caused by the vitamin that clinically and on laboratory examinations seems to be deficient in the greatest degree Sometimes an apparent vitamin deficiency conceals antagonistic reactions For this reason, the administration of large doses of a specific vitamin may produce a paradoxical phenomenon, i e, a decrease of the natural quantity of that same vitamin (avitaminosis caused by hypervitaminosis)

This phenomenon is difficult to demonstrate in human beings, because of their complicated nutritive equilibrium, but it can be followed step by step in lower organisms as, for example, in Phycomycetes Prof Schopfer reported that these micro-organisms require definite amounts of vitamins to grow and to develop If these amounts exceed a certain limit, the organism becomes vitamin deficient in spite of the excessive amount of vitamin administered Schopfer demonstrated a disturbance of the vitamin balance by substituting in the culture a vitamin with its antivitamin, by inhibiting the biosynthesis of a vitamin, or by greatly increasing in the culture the percentage of only one vitamin He thus has clarified two procedures, which he calls "molecular micrurgy' and molecular teratology" These procedures elucidate the analogous mechanisms observed clinically and therapeutically in man by Waife, Woods, and Fildes

While the micro-organisms are soon impaired as a result of molecular micrurgy or molecular teratology the human organism at first defends itself vigorously against the imbalance caused by inadequate doses of vitamins Therefore, when excessive doses of vitamin are administered, one does not observe the severe damage that, based on the experiment on Phycomycetes, is theoretically expected The human sets up this defense also against the devitaminizing action of some drugs Dr Di Mattei proved the existence of devitaminization by examining the urine of many patients to whom he had therapeutically administered special drugs He found (1) a vitamin that usually is not found in the urine, when the patient was given a certain drug for example, vitamin A in the urine of syphilitics treated with bismuth compounds, (2) increase in the elimination of specific common vitamins, for example, a great increase in ascorbic acid, which is always present in the urine, following salicylate, barbiturate, or cinchophen therapy, and nicotinamide in the urine of a patient treated with mercury compounds, (3) the disappearance of a common vitamin, for example, disappearance of ascorbic acid following massive doses of quinine or quinacrine hydrochloride (atabrine®), or of nicotinamide following sulfaguanidine therapy

Thus, drugs can cause avitaminosis by (1) preventing the absorption of nutritive vitamins, as happens when astringents, solvents, or laxatives are administered, (2) stimulating the elimination of vitamins by the urine, as happens when diuretics, cholagogues, and laxatives are administered, (3) speeding up the consumption of vitamins, as when the patient is treated with sulfur, iodine, pyrogenic compounds, or with drugs stimulating metabolism, (4) removing reserves of vitamins from the parenchymal tissues where they accumulate, as may result from treatment with salicylates, barbiturates, or from chemotherapy, (5) preventing the accumulation of vitamins, as by bismuth and by arsphenamine, (6) blocking the endogenous elaboration of vitamins, which happens when one administers intestinal disinfectants (sulfaguanidine or some antibiotics) that are too strong and destroy not only the parasitic intestinal flora but also the flora that produces vitamins, (7) arresting the action of the vitamins, as in the case of administration of sulfonamides, which exert enzymatic antivitaminic activity, (8) preventing the utilization of vitamins, as in cases of ether or chloroform anesthesia

Another factor causing avitaminosis is encountered after enterocolitis, when one parasitic group of the intestinal flora suppresses the group that forms vitamins According to Jiménez Diaz, who lectured on "A New Aspect of Intestinal Autointoxication, sprue, with its many symptoms, is simply an intestinal bacteriosis Owing to the chronic inflammatory condition of the intestine, the bacteria that destroy the vitamins produced by other bacteria multiply The patient soon has symptoms of deficiency in vitamins of the water soluble vitamin B group Later, other disturbances result from vitamin D deficiency Then the parathyroid glands, because of calcium lack, elicit the chain of nutritional hormone disorders that cause either pseudoeclamptic attacks with loss of consciousness or decalcification of important bones, especially intervertebral disks According to Jiménez Diaz, sprue can be associated with deficient fat absorption This, however, is secondary to, or concurrent with, bacteriosis, but is never, as was formerly believed, the predominant cause of the disease Jiménez-Diaz explains phenomena of histamine overproduction in allergic patients suffering from asthma and chronic recurrent urticaria as correlated with this bacteriosis The groups of the intestinal flora that produce histamine predominate over the groups that do not produce this substance Allergic manifestations are caused by the increased production of histamine Numerous herpetic disorders, notably on the lips and tongue, are the result of destruction by some antibiotics (chloramphenicol) of the intestinal flora that produces vitamin B Lesions of this type are being cured in France by a combination of antibiotics and of yeasts and ferments rich in vitamin B It seems likely that the rapid fattening of pigs and of turkeys with broth cultures of antibiotics is due to a selective process of destruction of bacteria that are parasites of the vitamins

Various interactions of drugs vitamins, bacteria, and histamine could explain the urticaria produced by sulfonamides Owing to the action of the sulfonamides, therefore, the histamine producing flora prevails, which explains the frequent cases of urticaria observed in patients with intestinal disease

Tumors of the Upper Respiratory Tract.—At a meeting of the Association of Medicine and Natural Sciences of Parma, Prof Bonati discussed rare neoplasms of the upper respiratory tract He described a case in which tumors developed simultaneously in two distinct and independent organs The patient, a man of 53, was a heavy drinker and smoker, syphilitic, and had a pronounced heredity for neoplastic disease from both parents After one year of severe aphonia, he underwent medical examination One tumor was observed in the larynx, and a second one, not ulcerated and clearly demarcated from the adjacent tissues, was observed in the posterior part of the right lateral margin of the tongue. Adenopathies suggesting a relationship between the two neoplasms were not observed Surgical intervention confirmed the observation made on endoscopic examination i e, that the tumor was endolaryngeal and was limited to the right vocal cord and the right laryngeal pouch Microscopic examination revealed the identical structure of the two tumors, which consisted of spinocellular epithelial cells Some authors tend to exclude from the malignant tumors those of identical structure, while others favor the concept that two or more tumors

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The items in these letters are contributed by regular correspondents in the various foreign countries.

of identical structure may occur simultaneously in two different parts of the organism without any interdependence

This clinical case is particularly interesting because of (1) the patient s evident heredity for blastomas (six of the nine members in three generations of his family had malignant neoplasms) (2) the rare location of the tumor (in the larynx and on the tongue), and (3) the presence in the patient of the elements most commonly believed to predispose to malignant neoplasm (syphilis and excessive use of tobacco and alcohol) Among the various pathogenic theories of malignant tumors, Prof Bonati mentioned that of blastomatous diathesis (Hardy, Bazin) and the theories against this (Hansemmann, Roussy, and Lubarcs) and that of embryonal infiltration (Durante, Ribbert, and Vogt) The speaker is inclined to classify this case according to the first pathogenic theory, that of blastomatous diathesis

At another meeting of the association, Prof A Rossi discussed acute tuberculosis of the hilus, recently described by Greppi and Dogliotti He spoke of its relatively high incidence, emphasized the difficulties of early diagnosis, and discussed the basic importance of the roentgenologic investigation He reported his own results, based on a study of tracheobronchial adenopathies that he obtained by tomography

He observed that the shadows of the hilus do not always show the characteristics demonstrated by Greppi and Dogliotti, in fact, the shadow of the hilus, when enlarged and deformed, may have a marmoreal or areolar instead of a homogeneous aspect, with contours sometimes diffuse, sometimes clear and polycyclic In every case, however, sectional roentgenography shows that, when the median plane is reached, the perihilar shadow, which was observed on direct examination, is in some phases homogenous, while in others it appears as a group of nodular patches surrounded by an opaque halo varying in size Moreover it is possible to distinguish clearly the perifocal exudative infiltration in the various layers

If the lesion is paratracheal, the shadows of the hilus are often associated with perihilar and particularly with mediastinal shadows, which have characteristics identical to those of the shadows of the hilus These shadows are homogeneous, varying in shape (piriform, quadrangular, or with polycyclic and diffuse contours) they are generally very large, entering the angle of the bifurcation of the trachea in a conelike shape. Sometimes they extend into the entire space between the trachea and the bronchi, either spreading between the primary bronchi or spreading generally into the right side, under the bronchus and the lower lobe In some cases where the direct examination is negative, sectional roentgenography reveals isolated mediastinal locations Stenosis of lobar bronchi with atelectasis is frequent Sometimes the fissures are involved, appearing as capillary or almost capillary striations

From the observations made in a complete roentgenologic investigation of the thorax, Rossi concludes that the term acute tuberculous disease of the mediastinum and of the hilus should be applied to this peculiar clinical picture The stratigraphic pictures give evidence of a generally postprimary tuberculous form with exudative characteristics In some cases, however, a late primary form cannot be excluded

SPAIN

Annual Meeting of Society of Nutrition and Digestion —The fourth annual meeting of the Spanish Society of Nutrition and Pathology of Digestion was held Dec , 1950 in Madrid, at the headquarters of the Spanish Medical Association (Colegio Oficial de Médicos) Dr H G Mogena presided The first official topic was diabetes Drs J C Oya and J L Rodriguez Miñón discussed methods of obtaining experimental diabetes, especially alloxan diabetes The speakers, in collaboration with Drs C Jimenez Diaz and F Grande Covian demonstrated that, even when high doses of alloxan are injected into dogs (100 mg per kilogram of body weight) it is possible to prevent the onset of diabetes by previously clamping the vascular pedicles of both kidneys The injection of nondiabetogenic doses of alloxan (30 mg per kilogram of body weight) to dogs with kidney damage induced by uranium is followed by diabetes On the other hand, injection of alloxan to depancreatized dogs aggravates the disease considerably However, if the injection is made after exclusion of the circulation of both kidneys aggravation of diabetes does not occur If both kidneys are removed in depancreatized dogs, diabetes becomes worse Since this effect does not occur in depancreatized dogs when the ureters are ligated it would appear that aggravation of diabetes following kidney damage or removal is not due to uremic intoxication or deficient urinary elimination of dextrose

Oya and Rodriguez-Miñon studied alloxan resistance in animals In dogs that received an injection of alloxan diabetes developed but disappeared spontaneously after which the animals became resistant to repeated injections of diabetogenic doses of alloxan in some cases even 21 months after the first injection These additional injections did not produce the characteristic initial variations of glycemia or modify the response of the animals to glucose tolerance tests This response seems to be due to a local immunity in the kidneys and, experimentally, in the liver The speakers analyzed chronic alloxan diabetes, stressing the differences between this form of experimental diabetes and diabetes due to removal of the pancreas Two dogs treated with alloxan survived for 1,105 and 1,248 days, respectively Blood sugar, during fasting was over 200 mg per 100 cc , and the animals had severe glycosuria Insulin was not administered, and ketonuria did not develop

Histologic study of the pancreas showed lesions of the same type as those described by other observers However, they are not diffuse as might be expected from diabetes caused by insular lesion only On the other hand, the same lesions were observed in experimental conditions that were not followed by diabetes, thus indicating participation of the kidneys and the liver in alloxan diabetes

The second official topic was pathogenesis of diabetes Dr L Castro of the Faculty of Medicine of Seville was the official speaker He discussed carbohydrate metabolism and its relation to fat and protein metabolism in the genesis of diabetes He pointed out that the so-called modern period in the study of diabetes started (about 1930) with the publications by Dr Samuel Soskin (Medical Research Institute of Michael Reese Hospital, Chicago) and collaborators Castro considers prediabetes a clinical reality, a period during which the metabolism of carbohydrates gradually changes He also discussed pituitary and thyroid diabetes (Houssay) and recent studies on the relation of sulfur and sulfur bearing compounds to carbohydrate metabolism He observed, during experiments, that prevention of the inflow from the vena porta into the pancreas followed by injection of insulin into the vena porta, results in an increase of blood glutathione content. He discussed the metabolic disturbances involved in the development of diabetes Dr Castro agreed in principle with the concept of impaired utilization of dextrose

The third official topic was treatment of the complications of diabetes Dr F Jimenez Garcia of Madrid was the official speaker Over a period of 25 years, he treated 2,800 diabetic patients, 83 of whom were in coma The speaker listed conditions that occur frequently in association with diabetes, such as diseases of the skin the sense organs, the nervous system, the kidney, the digestive tract, and the cardiovascular system, as well as acute and chronic infectious diseases, trauma surgery, pregnancy, childbirth, and lactation He dealt also with insulin resistance, severe acidosis, precoma hypoglycemic coma, and simple hypoglycemia He stressed the importance of Root s method of treating coma and of avoiding administration of dextrose solution He emphasized the need of early control of ketosis and the importance of treating complications, especially coma in special clinics The physician should be at the patient s bedside during coma until the patient recovers consciousness He denied the value of therapeutic rules concerning dosage of insulin in coma However he gave approximate rules, stressing that they are not applicable in all cases He pointed out the frequency of hypopotassemia in diabetic coma and the methods of diagnosis and treatment

The fourth official topic was diabetes as a social problem Prof J L Rodriguez Candela of the University of Valladolid was the official speaker Dr Hagedorn of Copenhagen lectured on initial stages and early diagnosis of diabetes Drs Civeira, Vilaclara Vidal Ribas Rocha Calvo Melendro Grande, Roda, Oliver Pascual Castro Fariñas and Romero Calatayud also read articles on diabetes

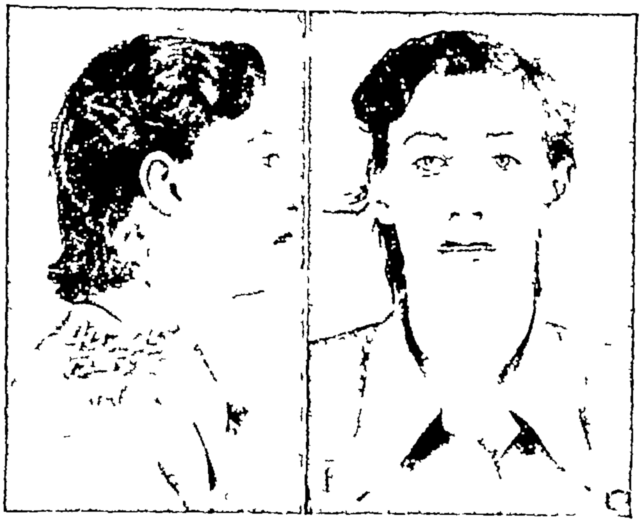
The Spanish Society of Pathology of Digestion and Nutrition has published the papers read at this meeting

CORRESPONDENCE

APPREHENSION OF MEDICAL EMPLOYEE

To the Editor—We wish to enlist your aid in apprehending Johanna A Simendinger, with many aliases She is described as 25 years, 5 ft 7 in, 108 lb, born in Johnstown, Pa, on Oct 25, 1925 Her fingerprint classification is 29/17 W/U 110/110 18/17

While employed in a local doctor's office, this subject cashed approximately $1,000 worth of checks, forging the doctor s name Because of her experience in a medical office, she may attempt to seek employment with other physicians



The accompanying photograph of her was taken in Minneapolis in 1949 If it would be possible to print this photograph in your publication, we feel that it would not only assist us in serving our Forgery Warrant (No F-3310, Bail $3,000) but would also serve to protect your subscribers Should this subject be recognized and apprehended, please refer to Long Beach Police Department Crime Report No 325 910

William H Dovey,
Chief of Police, Long Beach, Calif

PHYSICIANS FOR GUAM

To the Editor—During the past few years, the Territory of Guam has expanded at a rapid rate Economically the territory is progressing toward stability, after several years of war and enemy occupation, and this has naturally brought about an increase in commercial activity with a concomitant rise in population

Prior to the inauguration of civil government for the territory, the naval establishment provided dental care for the civilian population, but now the services of the Navy dentists and technicians are no longer available to the local residents

Exclusive of the military, there are approximately 30,000 local residents of Guamanian ancestry, and about 3,500 off-island residents In addition, there are some 7,000 contractors' employees of United States citizenship and some 12,000 contractors' employees of Philippine citizenship The contractors' employees are cared for on a contract basis

At the present time there are two private practicing doctors of medicine on the island, and there is a definite need for more

The Government of Guam maintains a 315 bed hospital with a competent staff, including specialists in most fields of medicine The hospital has a ward available for private patients and is open for doctors to care for their private patients

The climate on Guam is very similar to that of Florida or Honolulu The island is in a most interesting period of political and economic growth and approaching maturity While rehabilitation is not complete, living can be pleasant and interesting for a person with intelligence, curiosity, and adaptability

The Government of Guam would appreciate applications from practicing doctors of medicine for a license to practice on Guam The requirements for obtaining a license on Guam are graduation from a recognized medical school, a license to practice medicine in one of the 48 states or a territory having laws of reciprocity with one of the states, or the taking of an examination in lieu of reciprocity Any person interested in practicing medicine on Guam should communicate with the Executive Secretary, Commission on Medical Licensure, Government of Guam

Carlton Skinner,
Governor of Guam.

PHOSPHORUS POISONING

To the Editor—We read your stimulating editorial on "Acute Phosphorus Poisoning' in The Journal, June 2, 1951 (page 478), with great interest In bringing the subject of phosphorus poisoning to the attention of the medical profession, there is one practical point which we have encountered (*Gastroenterology* 17 279 [Feb] 1951) and feel should be emphasized This is the latent period or so-called period of quiescence It is a variable interval of time during which there is a subsidence of symptoms between the original gastrointestinal symptoms and the appearance of systemic complaints The former symptoms are thought to be due to direct irritation of the gut by the phosphorus, while the later complaints are attributed to the building up of high concentrations of phosphorus in the vital organs This period of remission may lull the physician into a false sense of security so that he discharges the patient as fully recovered, only to have him return in a day or two with more serious systemic symptoms Valuable time has been lost during which vigorous systemic treatment (high carbohydrate diet, intravenous glucose, amino acids, plasma vitamins, oxygen inhalation and liver extract) should have been employed, thus avoiding tissue damage, shock and often death

Since, in many cases of phosphorus poisoning, the latent period presents a deceptive picture to the physician of the subsidence of signs and symptoms without apparent recovery and since an awareness of this latent period may lower the mortality rate because of the continuation of therapy during this crucial time interval, we feel that it should be emphasized in any discussion of acute phosphorus poisoning

Lawrence Wechsler, M D,
Richard L. Wechsler, M D,
Montefiore Hospital, Pittsburgh

ADIE'S SYNDROME

To the Editor—Your correspondent Dr Wartenberg (The Journal, July 21, 1951, page 1152) appears to have overlooked the fact that the association of a tonic pupil and the absence of tendon reflexes was first described in England by Markus in 1906 The reference is C Markus, Trans Ophthalm Soc U K., 1906, *26* 50 The evidence that Markus first drew attention to the combination of signs often referred to as Adie's syndrome appears to be indisputable

G E Beaumont, M D, F.R C P.,
The Middlesex Hospital,
London, England

NURSING IN SWEDEN

To the Editor—Some time ago I wrote objecting to your reports on the poor Swedish nursing situation I regret to report now that university and state hospital nursing is "fair," while private hospital nursing is on a very low level Sweden is in my opinion headed for state medicine

Algot Åström, M D,
c/o A B Svenska Handelsbanken, Stockholm

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Contracts Failure to Perform Contract for Medical Services —The plaintiff physicians filed suit against the defendant on an account stated for fees for medical services From a judgment in favor of the plaintiffs, the defendant appealed to the court of appeals of Georgia, division number 2

The defendant admitted a promise to pay the amount for which suit was brought but alleged that the plaintiffs' failure to perform their obligations under a contract resulted in damage to the defendant in more than the balance of the amount due, for which reason the defendant should be relieved from liability The defendant s answer set up that the terms of the contract were that the plaintiffs agreed to give the defendant s wife prenatal care, attend the birth of the child, deliver the child, and give both mother and child post natal care for six weeks following the birth of the child, that they agreed to use the 'twilight-sleep method, the same being the use of certain drugs to render the mother unconscious of pain, such drugs to be administered when labor pains began to occur at three minute intervals that the doctor on duty when the defendant s wife entered the hospital would take charge and deliver the child

The defendant testified that his wife entered the hospital at 4 30 a m on December 21 and that Dr Grimes was on duty at that time Dr Grimes told the defendant that when birth pains occurred at three minute intervals his wife would be given paraldehyde and would thereafter suffer no further pain At 10 00 a m Dr Grimes left the hospital and Dr Fish came on duty He remained until 1 15 p m At approximately 2 00 p m the defendant s wife began suffering pains at three minute intervals, but the defendant could not find any of the clinic doctors in the hospital At about 3 50 he called at the clinic and was informed by Dr Grimes that Dr Colvin was supposed to come on duty and that he, Grimes, could not take over Colvin's case To this the defendant replied that he had contracted for four doctors and not with any one of them and he said he would try to get someone to come over, then Dr Bartholomew arrived at 4 20 and defendant met him in the hall and urged him to come to his wife s bedside, that he did so, that drugs were there after administered that the child was born at 5 38 p m , that the defendant s wife remained under the care of the clinic during the five day period she was in the hospital but that afterwards, due to the altercation the defendant engaged another doctor for the post natal treatment

From the defendant s own testimony said the court, it appears that the agreement contemplated generally that the expectant mother would receive adequate care and the pain relieving drugs, and it would seem that whether the care and drugs she actually received under the circumstances were adequate would be a matter for expert testimony of which there was none It does appear, the court continued that the defendant s wife suffered labor pains at three minute intervals between 2 00 p m and 4 20 p m , during which time no doctor was in attendance and no pain relieving drugs administered The damage alleged to have resulted from this was the pain and suffering of the wife during that period Without entering into a discussion as to whether this would be a proper subject matter for an action to which the husband only is a party it does appear that there was no guarantee that all or any given amount of pain would be relieved or that all pain would be relieved during any particular period

It is apparent from its terms that the agreement constituted an entire contract for a given price the treatment to extend from the time of the agreement until six weeks after birth So far as the testimony shows this agreement was fulfilled by the plaintiffs in so far as they were allowed to do so, for all of this period except 2½ hours on the afternoon of the child s birth It is true that the defendant's wife received only five days of the agreed six weeks post natal treatment but this was due to the defendant s action in removing his wife and child from the care of the clinic when they left the hospital The contract was entire and was not severable The defendant contended that this being so the plaintiffs cannot recover unless they have performed all of the obligations imposed upon them under the terms of the contract, and that they did not perform all of these terms in that for the 2½-hour period in question at a time when his wife most needed the services of the doctors, she did not receive them Granting, said the court, that the failure of the doctors to appear during the time in question constituted a breach of the agreement and that the defendant at that time could have refused all further services from them, procured another physician, and treated the contract as being at an end, he did not do so, but accepted the plaintiff's services at 4 20 that afternoon, through the delivery of the child, and for five days thereafter, not releasing them until after the mother had left the hospital While it is easily understandable that the defendant would not wish to employ a new physician on the very day his wife was in labor, nevertheless his conduct in retaining them throughout her subsequent stay in the hospital, and in having them proceed with a minor operation on the infant, constituted a waiver of his right to rely upon such breach for the purpose of rescinding the entire contract

No question was raised as to the reasonableness of the fee for which the plaintiff was suing and the judgment of the trial court in favor of the plaintiff physicians was therefor affirmed —*Cartwright v Bartholomew 64 S E (2d) 323 (Georgia 1951)*

MEDICAL MOTION PICTURES

Operation Blood Bank 16 mm color sound showing time 14 min. Produced in 1951 for Cutter Laboratories by Moss Film Productions San Francisco Procurable on loan from Cutter Laboratories Fourth and Parker Berkeley 10 Calif or local district offices of Cutter Laboratories

Blood transfusions have become one of the most frequently employed operative procedures in modern medicine in peace and in war, the development of the technic of storing blood in what has become known as blood banks has made this possible The need for whole blood is always acute, and the urgency becomes still greater in war and when atomic warfare threatens Blood is the only product used in medicine that cannot be manufactured and must be obtained from man All this makes it necessary to spread the information about blood banks and their operation this is what the film intends to do

After a brief introduction dealing with the donor procurement activities the audience is taken behind the scenes of a blood bank One follows the donor from the moment he enters, has a physical examination, signs a release, and has his blood examined The audience sees the technic of venipuncture, the handling of the donor, and the collection of the blood, including the extra specimens for additional laboratory tests After the blood is drawn the donor is given some refreshment, his blood is placed in the refrigerator and is then shipped from the central blood bank to branch depositories in hospitals

The various technics employed during the entire process are presented clearly and in sufficient detail to make the film a valuable educational experience for blood bank technicians nurses interns, laboratory technicians in general medical students, and physicians This film can be used to advantage for the education of lay audiences in order to interest them in blood donations It will dispel fears among lay persons and make them more amenable to respond to requests for blood This picture is well organized and the photography and narration are excellent

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A M A Arch Internal Medicine, Chicago

88 1-134 (July) 1951

*Hormonal Neurogenic Vasopressor Mechanism R. D Taylor I H Page and A C Corcoran —p 1
Cation Exchange Resin in Treatment of Nephrotic *Syndrome.* R W Lippman —p 9
Blood Volume in Pulmonary Tuberculosis N I Berlin D F Rowles, G M Hyde and others —p 17
Potassium Deficiency in Chronic Renal Disease H K Schoch —p 20
*Human Adrenal Cortex After Administration of ACTH and Cortisone Morphologic Changes W M O Donnell S S Fajans and J G Weinbaum —p 28
Peritoneoscopic Cholangiography P G Kell and S N Landis —p 36
Late Effects of Thorium Dioxide in Man C Cassel J M Ruffin R J Reeves and L D *Stoddard* —p 42
Hypertensive and Nonhypertensive Periarteritis Nodosa S L Wilens and J Glynn —p 51
Rational Basis for Use of Low Sodium High Protein Diet Therapy in Laennec's Cirrhosis R M Kark R W Keeton N O Calloway —p 61
*Epilepsy in Systemic Lupus Erythematosus Effect of Cortisone and *ACTH P W* Russell J R Haserick and E. M Zucker —p 78
Recent Advances in Nutrition Review of Literature 1949 1950 G A Goldsmith and J Gibbens —p 93

Hormonal Neurogenic Vasopressor Mechanism.—Taylor and associates have previously reported two observations indicating central nervous system participation in hypertension first, the hypertensive diencephalic syndrome and, second, a pressor substance in the cerebral ventricular fluid of patients with hypertensive disease In addition, while cerebral ischemia produces a transitory and unstable *hypertension in dogs, a chronic relatively* stable form of neurogenic hypertension can be elicited by adding to the effects of cerebral ischemia prolonged *stimulation* of the floor of the fourth ventricle Recently both cerebral *baro*receptors, which alter arterial pressure in response to changes *in intracranial spinal fluid pressure, and cerebral vessel chemo*receptors, which respond homeostatically to a variety *of* vasoactive drugs, have been described The *present communication* draws attention to the existence of still another *central nervous* mechanism that acts on arterial pressure *The authors describe* cross circulation *experiments in dogs with spinal cord pithed* below the sixth cervical segment and both vagi cut in the neck On centripetal vagus stimulation, a vasopressor substance distinct from epinephrine, arterenol (nor epinephrine), renin, angiotonin and pitressin was liberated into the blood stream Its activity was enhanced by large doses of tetraethylammonium chloride and inhibited and ultimately abolished by *l* hydrazinophthalazine (C-5968) This drug also inhibits the pressor action of serotonin, the pressor and vasoconstrictor substance formed during the clotting of blood On appropriate stimulation, the brain can act as an endocrine organ that releases a pressor substance into the blood The hypotensive properties of the phthalazine derivative (C 5968) *are consistent* with this hypothesis

Morphology of Adrenal Cortex After *Administration of* ACTH and Cortisone.—The adrenals of nine patients treated with corticotrophin (ACTH) and of five treated with cortisone were studied In patients who had received corticotrophin, there was loss of lipids, hypertrophy of the zona fasciculata and zona reticularis, and, in some cases, cortical hyperplasia *The zona* glomerulosa appeared narrowed and ill-defined, but some of its cells were hypertrophic This layer may have *responded to* the hormonal stimulation by *a more rapid transformation* of its cells to the fascicular type as a means of augmenting the *secretory complex The described* morphologic pattern is believed to be similar to that observed in *patients who have been* subjected to stress The adrenal glands of patients who had *received cortisone* showed atrophy of the fascicular and *reticular* layers and broadening of the zona glomerulosa *Although* the sudanophilic material was reduced in concentration some was *still present* as intracellular globules These changes can be compared to those *seen in the adrenal glands following destruction of the* pituitary gland *This suggests* that cortisone administration induces adrenal atrophy by suppressing the secretion of corticotrophin

Epilepsy in Lupus Erythematosus.—This study was prompted by the observation of grand mal epileptic attacks in lupus patients with positive L E test reactions The authors of this paper believe that any patient with epilepsy and rheumatoid arthritis *may have* systemic lupus erythematosus A review of the literature reveals that among 144 patients with the lupus erythematosus syndrome, *there* were 22 *(15%)* who had convulsions Seven of 28 patients with positive plasma L E reactions who have been observed *at* the Cleveland Clinic since February, 1942, had convulsions. The incidence of this symptom is thus significantly greater in the series of positive L E tests than among cases observed prior to *the introduction of the plasma L. E. test Two patients had* convulsions for years prior to the appearance of recognizable symptoms of lupus erythematosus This suggests that epilepsy, when accompanied with rheumatoid arthritis or leukopenia, may constitute a prodromal symptom of systemic lupus erythematosus. *Routine electroencephalograms were made on the last* 11 *patients* of the series, abnormal patterns being noted in seven Electroencephalograms frequently revealed an organic type of dysrhythmia in patients with or without convulsions in systemic lupus erythematosus Progressive and regressive changes in the electroencephalogram were found to *parallel relapses or remissions* in this disease Routine pathological studies in four patients failed to reveal specific brain alterations in lupus erythematosus. Treatment with cortisone and corticotrophin produced improvement in epileptiform seizures related to lupus erythematosus

A M A Arch Pathology, Chicago

52 1-104 (July) 1951

Experimental Medullary Necrosis of Kidney Morphologic and Functional Study E. E Mandel and H Popper —p 1
Problems of Classification of Poliomyelitis Virus. C. W Jungeblut —p 18
*Coexistent Gastroduodenal *and Cerebral Lesions* in Infancy and Childhood H G Schlumberger —p 43
Observations on Cytoplasmic Hepatic-Cell Pigment in Man J Post J G Benton and R Breakstone —p 67
Method for Histopathologic Study of Atrioventricular Node Bundle and Branches. M Lev J Widran and E. E Erickson —p 73
Granulomatous Glomerulonephritis Associated with Polyarthritis Report of Case J F A McManus and A T Hornsby —p 84
Portal Axis Thrombosis with Spontaneous Portacaval Shunt and Resultant Cor Pulmonale F A Mantz Jr and E Craige —p 91
Note on Origin of Multinucleated Giant Cells from Vascular *Channels* in Tumors Tumors *Arising* in Thyroid Gland Bone and Soft Tissue L. J Rather —p 98

Coexistent Gastroduodenal and Cerebral Lesions.—In a series of 251 consecutive autopsies on infants and children Schlumberger observed one case of multiple acute gastric ulcers, two cases of gastromalacia, and seven of acute duodenal ulcer, in all these cases the gastric lesion was *associated with* cerebral damage Tuberculous meningoencephalitis was found in three of these patients, bulbar poliomyelitis in two, edema and anoxia in two, and intraventricular hemorrhage, sinus thrombosis, and microcephaly in one each The author suggests that the causal relationships between cerebral lesions and acute gastroduodenal ulcers are multiple and complex The integrating factors may be *nervous or humoral*, and perhaps oftenest both The neural mechanism is probably that suggested by Cushing i e, stimu

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An asterisk (*) before a title indicates that the article is abstracted.

lation of a parasympathetic center in the diencephalon that secondarily activates cranioautonomic nuclei, especially the dorsal nucleus of the vagus The resultant autonomic imbalance produces local ischemia or hyperemia with stasis and increased capillary permeability Either of these vascular changes leads to anoxia and tissue damage with decreased resistance to the action of the gastric juice The hypothalamus also influences the motility of the gastrointestinal tract and the quantity and the quality of the digestive juices Increase in gastric hydrochloric acid or pepsin and/or a decrease in the neutralizing bile or pancreatic juice may be important in the production of gastroduodenal ulcers In conjunction with the well known neural mechanism the more recently recognized humoral responses probably play a part These patients had been subjected to sub acute or chronic stress that may have led to the liberation of large amounts of corticotrophin and corticoid hormones, which may have led in turn to increased gastric secretion and to impaired healing of the erosions initially produced by focal vascular changes

American Journal of Clinical Pathology, Baltimore

21 399 500 (May) 1951

Rh Sensitization Following Repeated Transfusions of Rh Positive Blood into Rh Negative Recipients. S J Klein B E Konwaler and W K. Mahany —p 399
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American Journal of Ophthalmology, Chicago

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American Journal of Surgery, New York

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*Infrequency of Pelvic Endometriosis in Negro Women. G Blinick and V J Merendino —p 635
Surital Sodium New Intravenous Anesthetic Agent. P C. Lund —p 637
Use of Kirschner Wire Forgotten Accessory in Treatment of Intracapsular Fractures of Femur M Behrend —p 642.

Rarity of Pelvic Endometriosis in Negro Women —The incidence of pelvic endometriosis was only 0 1% on the gynecologic service at Harlem Hospital, where nearly all patients are Negro women Uterine adenomyosis was commoner but was found in only 1 14% of laparotomies The causes of endometriosis are not known but two facts may help to explain the rarity of endometriosis in Negro women First endometriosis is rare in conjunction with pelvic inflammatory disease This has been repeatedly demonstrated by Sampson and others and is a strong argument to support his theory of pathogenesis by tubal reflux At Harlem Hospital a large percentage of patients who undergo laparotomy have severe endosalpingitis with tubal occlusion Second, it has been pointed out that the incidence of pelvic endometriosis is low in ward patients as compared with private patients This is attributed to earlier marriage and childbearing in the ward patients and this factor probably applies also to the Negro women A constitutional racial factor may also be involved

Am Practitioner & Digest of Treatment, Philadelphia

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Blood, New York

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*Studies on Cross Circulation in Man I Methods and Clinical Changes. H R Bierman R. L. Byron Jr K H Kelly and others —p 487
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Effect of Massive Doses of Cortisone on Peripheral Blood and Bone Marrow of the Mouse H. Quittner N Wald L. N Sussman and W Antopol —p 513
*Studies in the Rh Sensitization I Methods II Effect of Rh Negative Pregnancies on Rh Antibody Titer A. S Wiener R. Nappi and E. B Gordon —p 522.
Relation of Methemoglobin to Hemolysis B B Clark and R. W Morrissey —p 532.
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Inhibition by Rutin of Capillary Injury by Alpha Radiation in Rats J Q Griffith Jr and J F Couch —p 552
Certain Hemolytic Mechanisms in Hemolytic Anemia E Ponder —p 559

Cross Circulation in Leukemia —The elevated leucocyte count in leukemia may be due to increased production of white blood cells in the hematopoietic tissues or decreased removal of white cells from the circulating blood by the capillaries of the lung Leukemic leucocytes infused intravenously into nonleukemic subjects are promptly and almost completely removed from the circulating blood by the lungs of the recipient To study this phenomenon more fully the authors performed cross transfusions between leukemic and nonleukemic patients They describe the methods used for vein to-vein artery-to artery, and artery to vein transfusions and conclude that the interarterial method is most satisfactory for investigation of the pulmonary leucocyte removal mechanism In one child with lymphogenous leukemia there was a pronounced decrease in the leucocyte count after each of three cross transfusions and a moribund state was succeeded by a transient remission of one month s duration after the first transfusion In another patient with lymphogenous leukemia an impairment in the pulmonary removal mechan ism was demonstrated by the finding of numerous myeloid cells in the arterial blood after an intravenous transfusion of myelogenous blood An excessive leucocyte removal mechanism was demonstrated in a patient with subleukemic lymphogenous leukemia Equalization of the number of circulating leucocytes in a leukemic and a nonleukemic patient was not achieved even after a 26 hour cross transfusion, during which 150 liters of blood were exchanged There was no evidence even at autopsy of the transmission of leukemia to the nonleukemic patients, most of whom had incurable malignant lesions

Rh Negative Child and Rh Antibody Titer—The Rh antibody titer was studied during pregnancy and after delivery in 11 cases in which previously sensitized Rh negative mothers had Rh-negative babies In addition, one case was studied in which a type Rh_1 mother, previously sensitized to the rh" factor, gave birth to a type Rh_1 baby In all cases the babies were normal at birth and the baby's serum contained univalent Rh antibodies equal in titer to those present in the maternal serum In no case was there a rise in the antibody titer in the maternal serum either during the pregnancy or after the baby was born Thus, it has not been possible to confirm claims concerning a 'nonspecific anamnestic rise" in Rh antibody titer, said to be caused by an Rh-negative baby In one of two cases described in detail, there was no appreciable change in Rh antibody titer during the pregnancy, despite the use of so-called Rh hapten, nor had there been an appreciable change in titer for as long as two and one-half years previously The Rh antibody titer of the baby s blood dropped about 98% by the end of the sixth month, while during the same period of time the maternal antibody titer fell only approximately 35% From the course of the Rh antibody titer of the baby's serum, the half-life of the antibody globulin molecule is estimated to be about 30 days

Bulletin New York Academy of Medicine, New York

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Some Observations Based on Review of 900 Laminectomies E Sachs.—p 370
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Cancer, New York

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*Role of Vertebral Venous System in Metastasis of Cancer to Spinal Column Experiments with Tumor-Cell Suspensions in Rats and Rabbits D R Coman and R. P deLong—p 610
Studies on Mechanism of Action of Chemotherapeutic Agents in Cancer V Influence of Citrovorum Factor and Folic Acid on Toxic Manifestations of Aminopterin in Mice. E M Greenspan A Goldin and E B Schoenbach.—p 619
Vertical Transmission of Mouse Mammary Carcinoma and Chicken Leukemia Its Possible Implications for Human Pathology L. Gross.—p 626
Effect of Radioactive Colloidal Metallic Gold in Treatment of 'Acute AK-4 Leukemia in Mice. P F Hahn, H E Skipper E L Carothers and L. J Bernard—p 634

Vertebral Venous System and Metastases to Spinal Column—Experiments were designed to determine whether embolic tumor cells introduced into the femoral vein could pass directly to the lumbar vertebrae by way of the vertebral veins, by passing the lungs If such were found to be the case, then, as suggested by Batson, the spontaneous metastases of pelvic tumors to the lumbar spine in man might be accounted for without the assumption that the embolic cells pass through the capillaries of the lung to be distributed by the arterial circulation Tumor-cell suspensions were injected into the femoral veins of rats and rabbits while slight abdominal pressure was applied At autopsy, tumor foci were found in the vertebral venous system of 12 out of 14 rats and of four out of seven rabbits Most of these tumor foci were found in the lumbar vertebrae, but one each was found in the spinal cord, the venae vasorum of the femoral vessels, and the choroid plexus of the brain No foci were found in arterioles, where one would expect them to appear if the cells had entered the arterial circulation by traversing the pulmonary blood channels Cells injected without accompanying abdominal compression resulted, with only one exception, in the appearance of tumors in the lungs only, again indicating failure of the cells to pass through the lung capillaries. These observations are in accord with the concept that the frequency of spontaneous tumor metastases to the vertebral column from pelvic tumors in man depends on the entrance of tumor-cell emboli directly into the vertebral venous system, by passing the lungs

Circulation, New York

3 801-960 (June) 1951

Influence of Respiratory Gas Mixtures on Arterial Pressure and Vascular Reactivity in Normal' and Hypertensive Dogs I H. Page and F Olmsted—p 801
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*Ammonium Chloride Acidosis Report of Six Cases. M H Sleisenger and A S Freedberg—p 837
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Effect of "Salt Hypertension on Atherosclerosis in Chicks Fed Mash Without Cholesterol Supplement J Stamler and L N Katz.—p 859
*Plasma Cholesterol Levels During Rapid Weight Reduction. W J Walker and J A Wier—p 864
Age Factor in Hypercholesteremia and Atheromatosis in Chick. S Rodbard, L. N Katz, C Bolene and others—p 867
Exercise Test for Coronary Insufficiency D Littmann and M H Rodman—p 875
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Advanced Disturbances of Cardiac Mechanism in Potassium Intoxication in Man H D Levine J P Merrill and W Somerville.—p 889
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On Evaluating Einthoven Triangle Theory J S Butterworth and J J Thorpe—p 923
Clinical Aspects of Mercurial Diuretics C. T Ray and G E. Burch.—p 926

Ammonium Chloride Acidosis.—The occurrence of acidosis is reported in six patients following the administration of 6 to 8 gm of enteric-coated ammonium chloride daily for seven to 45 days The acidosis was severe in four patients and nearly fatal in two Five patients had congestive heart failure and various types of intrinsic renal disease The remaining patient had subacute glomerulonephritis and anasarca Clinical manifestations ranged from anorexia, nausea and vomiting with lassitude, to marked stupor, areflexia, and Kussmaul respiration In all patients rapid improvement followed omission of ammonium chloride and intravenous administration of fluids and lactate No close relationship between the degree of congestive heart failure, the amount of drug administered, or the severity of acidosis was noted In three of the patients with congestive heart failure pronounced azotemia developed The severe acidosis is believed to be related to intrinsic renal disease and the inability of the kidneys to prevent continued loss through the urine of fixed base with chloride The elevated plasma chloride concentrations observed in ammonium chloride acidosis are related to continued intake of chloride, increased tubular reabsorption of chlorides, and, in part dehydration resulting from pronounced water loss Decrease in urea clearance and a rise in nonprotein nitrogen were considered as further effects of acidosis in four patients Two patients had severe anemia, which is known to be associated with decreased renal blood flow, but sufficient data are lacking to assess the role of the anemia in the production of acidosis Ammonium chloride is a valuable adjunct in the management of congestive heart failure but should be used with great caution when renal disease is suspected or present It is suggested that the administration of ammonium chloride be limited to three consecutive days per week When longer periods of administration are necessary, careful observation of the patient and measurement of the blood carbon dioxide combining power are indicated

Plasma Cholesterol Levels During Rapid Weight Reduction — Twenty seven obese patients were placed on reducing diets of 600 or 800 calories daily after their weights had been recorded and the fasting plasma cholesterol level had been ascertained Forty plasma cholesterol determinations were made during the period of rapid weight reduction, 27 were lower, and 30 higher than earlier control levels There seemed to be no significant increase or decrease in cholesterol levels during the first two weeks of weight reduction Determinations taken during the third week averaged 32 5 mg per 100 cc lower than control values Patients undergoing most rapid weight loss showed the greatest drop in plasma cholesterol The diet offered to the patients was extremely low in fat and relatively high in protein and bulk Many fears concerning rapid weight reduction have been based on the concept that weight reduction would cause increased fat mobilization, with consequent elevation of blood cholesterol since it is one of the chief vehicles for fat transport Results in these patients indicated that fear of elevating the plasma cholesterol need not deter the physician from subjecting obese patients to rapid weight reduction

Delaware State Medical Journal, Wilmington

23 105 136 (May) 1951

Present Status of Antibiotic Therapy D A Cooper —p 105
Biology of Ageing E. A. Bortz.—p 112
Review of Basic Psychiatric Principles P J Poinsard —p 116
Post Prandial Blood Sugar· A Probable Normal J L. Ackerman and E M Bohan —p 122
*Mesenteric Vascular Occlusion. C. J Dougherty —p 125

Mesenteric Vascular Occlusion.—The symptomatology of the patient here discussed resembled that of acute appendicitis The symptoms did not include the sudden severe abdominal pain with shock and collapse seen in a complete occlusion of a large mesenteric vessel with extensive devitalization of bowel The pain was at first diffuse throughout the abdomen Nausea was present, but vomiting was minimal, and the pain did not become severe until the day of admission Laboratory studies indicated an infectious process, there was a high white cell count, and the urinary findings could be interpreted as the reaction of the kidneys to the toxemia Serum amylase studies were not done prior to the emergency laparotomy, because the site of the tenderness and rigidity did not suggest acute pancreatitis Mesenteric occlusion, a volvulus of the cecum or small bowel, and perforated Meckel s diverticulum could have been considered preoperatively as possibilities but the commoner diseases are usually thought of in the presence of acute abdominal symptoms The gangrenous portions of the terminal ileum and cecum were resected, and a temporary ileostomy was made After the intestinal continuity was reestablished in a second operation, the patient recovered from this often fatal disease

Florida Medical Association Journal, Jacksonville

38 1-76 (July) 1951

Massive Resection of Small Intestine Follow Up Study of Case After Removal of 12 Feet Six Inches of Small Intestine J C Pate and J C. Pate Jr —p 19
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Georgia Medical Association Journal, Atlanta

40 239-278 (June) 1951

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G P (J Am Acad Gen Practice), Kansas City, Mo

3 1-192 (June) 1951

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Journal of Clinical Investigation, Cincinnati

30 539 684 (June) 1951

*Peripheral Vascular Hemodynamics in Bulbar Conjunctiva of Subjects with Hypertensive Vascular Disease R. E Lee and E. A Holze —p 539
Sensitivity of Serum Enzyme Inhibitors to Variety of Cancer Chemotherapeutic Agents. F W Ellis and P M West —p 547
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Immunophysiology of Trichinosis Alterations in Blood Volume and Thiocyanate Space in Relation to Development of Humoral Antibodies in Rabbit. J K. Aikawa G T Harrell and T B Miller —p 575
Bacterial Capsular Polysaccharides in Cerebrospinal Fluid of Patients with Purulent Meningitis D L. Larson —p 582
Dietary Treatment of Hypertension II Sodium Depletion as Related to Therapeutic Effect. V P Dole L. K Dahl G C. Cotzias and others —p 584
Congenital SPCA Deficiency Hitherto Unrecognized Coagulation Defect with Hemorrhage Rectified by Serum and Serum Fractions. B Alexander R. Goldstein G Landwehr and C. D Cook.—p 596
Plasma Proteins in Toxemias of Pregnancy H C Mack A R. Robinson M E. Wiseman and others —p 609
Measurement of C-Reactive Protein in Human Sera Comparison of Clinical Tests on Basis of Quantitative Method H F Wood and M McCarty —p 616

Hemodynamics in Bulbar Conjunctiva in Hypertension — Studies were made on the conjunctival capillary vessels of subjects with hypertensive vascular disease The bulbar conjunctiva in each eye was examined with a slit lamp microscope in a manner similar to that used in routine ophthalmological practice The general state of the capillary bed was noted (i e, ischemic, plethoric, or euvascular) In certain cases, the velocity of blood flow was measured in the metarterioles capillaries, and collecting venules The capillary bed and its reactions in the conjunctiva of normotensive subjects had been previously described When all criteria selected for evaluation were considered together, an over all pattern emerged of certain peripheral vascular abnormalities in hypertension The total pattern was not found in the normotensive controls However, no one feature selected for study could be correlated absolutely with the age of the patient the degree of blood pressure elevation symptomatology or the duration of the illness The abnormal hemodynamics observed in the conjunctival peripheral circulation in essential hypertension consisted of (1) metarteriolar narrowing (2) augmented spontaneous vasomotor activity in precapillary sphincters, and (3) coiling, looping, and tortuosity of many vessels There was also a heightened sensitivity of metarterioles and precapillaries to topically applied epinephrine and a reduced velocity of peripheral blood flow These features are generally in accord with those that have been described for similar vessels in the splanchnic area of animals with experimental renal hypertension The conjunctival peripheral vessels of four normotensive subjects who had had an apparently spontaneous remission of previous hypertension displayed the same phenomena found in the conjunctival vascular bed of patients with sustained hypertension

Journal of Experimental Medicine, New York

93 513 654 (June) 1951

Antimicrobial Agents in Prevention of Dietary Hepatic Injury (Necrosis, Cirrhosis) in Rats P György J Stokes Jr H Goldblatt and H. Popper —p 513
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Variability of BCG Strains (Bacillus Calmette-Guérin) W E. Suter and R J Dubos —p 559
Nature and Significance of Changes in Adrenal Cytology Weight, and Cortical/Medullary Ratio in Experimental Renal Hypertension and Clinical Hypertension L. J Rather —p 573
New Member of Psittacosis-Lymphogranuloma Group of Viruses that Causes Infection in Calves C. J York and J A Baker —p 587
Mechanism of Proteinuria IV Effect of Renin on Hemoglobin Excretion R W Lippman H J Ureen and J Oliver —p 605
Studies on Acute Disseminated Encephalomyelitis Produced Experimentally in Rhesus Monkeys VI Changes in Cerebrospinal Fluid Proteins E A Kabat, A Wolf A E Bezer and J P Murray —p 615
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Journal of Immunology, Baltimore

66 487-626 (May) 1951

Experimental Production of Arteritis by Passive Sensitization S G Cohen L. D Mayer and L. H Criep —p 487
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Hemolysis Inhibition Test for Detection of Antibodies to Newcastle Disease Virus M J Kahnke —p 507
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Id II Effect of Skin Testing upon Antibody Level and Resistance. G Henle J S Burgoon W J Bashe Jr and others —p 551
*Id III Effect of Subcutaneous Injection of Inactivated Mumps Virus Vaccines G Henle W J Bashe Jr J S Burgoon and others.—p 561
*Id. IV Effect of Oral Spraying of Attenuated Active Virus G Henle J Stokes Jr J S Burgoon and others —p 579
Experimental Human Salmonellosis II Immunity Studies Following Experimental Illness with Salmonella Meleagridis and Salmonella Anatum N B McCullough and C. W Eisele —p 595
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Effects of Cortisone and ACTH on Toxins of Rickettsiae and Salmonella Typhosa. E. B Jackson and J E. Smadel —p 621

Subcutaneous Injection of Mumps Virus Vaccines.—A large part of the studies reported here were carried out in Southeastern Alaska, where there had been no major epidemic of mumps for over eight years Consequently, it was expected to find many persons in older age ranges who never had been exposed to mumps and thus the antibody response in truly susceptible individuals could be studied The serological response of human beings to subcutaneous vaccination with inactivated mumps virus, as measured by complement fixation and hemagglutination inhibition tests, was studied Maximal complement fixing antibody response was obtained two to three weeks after vaccination A single injection of vaccine resulted in antibody responses indistinguishable from those recorded after two injections two weeks apart The frequency of response, as well as the height of titers attained, depended on the amount of vaccine injected Only with 4 ml of vaccine, representing approximately a 20-fold concentrate of virus from allantoic fluid, did all susceptible persons show some antibody response A correlation between the antibody titers obtained by the virus antigen complement-fixation test and those obtained by the hemagglutination inhibition reaction, indicated that the two techniques probably measure different antibodies Although, in general, a high titer by one test was matched by a high antibody level in the other, the ratios of hemagglutination inhibition to complement-fixation titers varied over a range far greater than could be ascribed to the variations inherent in the techniques An epidemic of mumps occurred nine to 12 months after vaccination. The incidence of infection among the controls (63 cases in 193) was almost twice that encountered in the immunized group (46 cases in 250) This result gained in significance when the incidence of mumps in the vaccinated group was correlated with the antibody levels attained four to five weeks after vaccination The incidence was highest in those who failed to respond with measurable antibodies to vaccination and decreased markedly with the increase in the antibody level attained after immunization The data indicate that transitory immunity may be induced by subcutaneous vaccination with inactivated mumps virus and that its duration seems to be related to the height of antibody levels attained

Oral Spraying of Mumps Virus.—Studies on the response of human beings to oral spraying of attenuated active mumps virus revealed that among 410 children judged susceptible by negative histories and serological tests, six showed mild signs of infection Up to 93% of the children responded with antibodies as measured by the complement fixation technique The frequency of response depended on the concentration of virus used. Hemagglutination-inhibition tests in a small number of cases revealed formation of antibodies in 60% In most instances the serological tests were negative one year after the spraying However, following skin testing at that time, the antibody response was greater in these children than in comparable control subjects Experimental exposure of four children to mumps virus three months after immunization failed to produce the disease, whereas in four out of six controls clinical evidence of mumps developed Of the larger groups treated by this procedure only those in one institution had been definitely exposed to mumps eight months later Eight cases occurred among the nonimmunized children, mainly new admissions to the school Although these data permit no conclusion, they justify further exploration of this method of active immunization

Journal of International College of Surgeons, Chicago

16 1 140 (July) 1951

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Meckel's Diverticulum. S J Carnazzo and E J McGreevy —p 22.
Prolapse of Uterus Operation for Its Relief A E Kanter A H. Klawans and R W Hack.—p 37
*Myoepithelial Hamartoma of Stomach Wall. M Thorek.—p 48
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Subcutaneous Injection of Mumps Virus Vaccines.—A large part of the studies reported here were carried out in Southeastern Alaska, where there had been no major epidemic of mumps for over eight years Consequently, it was expected to find many persons in older age ranges who never had been exposed to mumps and thus the antibody response in truly susceptible individuals could be studied The serological response of human beings to subcutaneous vaccination with inactivated mumps virus, as measured by complement fixation and hemagglutination inhibition tests, was studied Maximal complement fixing antibody response was obtained two to three weeks after vaccination A single injection of vaccine resulted in antibody responses indistinguishable from those recorded after two injections two weeks apart The frequency of response as well as the height of titers attained, depended on the amount of vaccine injected Only with 4 ml of vaccine, representing approximately a 20 fold concentrate of virus from allantoic fluid, did all susceptible persons show some antibody response A correlation between the antibody titers obtained by the virus antigen complement fixation test and those obtained by the hemagglutination inhibition reaction, indicated that the two techniques probably measure different antibodies Although, in general, a high titer by one test was matched by a high antibody level in the other, the ratios of hemagglutination inhibition to complement-fixation titers varied over a range far greater than could be ascribed to the variations inherent in the techniques An epidemic of mumps occurred nine to 12 months after vaccination. The incidence of infection among the controls (63 cases in 193) was almost twice that encountered in the immunized group (46 cases in 250) This result gained in significance when the incidence of mumps in the vaccinated group was correlated with the antibody levels attained four to five weeks after vaccination The incidence was highest in those who failed to respond with measurable antibodies to vaccination and decreased markedly with the increase in the antibody level attained after immunization The data indicate that transitory immunity may be induced by subcutaneous vaccination with inactivated mumps virus and that its duration seems to be related to the height of antibody levels attained

Oral Spraying of Mumps Virus—Studies on the response of human beings to oral spraying of attenuated active mumps virus revealed that among 410 children judged susceptible by negative histories and serological tests, six showed mild signs of infection Up to 93% of the children responded with antibodies as measured by the complement-fixation technique The frequency of response depended on the concentration of virus used. Hemagglutination inhibition tests in a small number of cases revealed formation of antibodies in 60% In most instances the serological tests were negative one year after the spraying However, following skin testing at that time, the antibody response was greater in these children than in comparable control subjects Experimental exposure of four children to mumps virus three months after immunization failed to produce the disease, whereas in four out of six controls clinical evidence of mumps developed Of the larger groups treated by this procedure only those in one institution had been definitely exposed to mumps eight months later Eight cases occurred among the nonimmunized children, mainly new admissions to the school Although these data permit no conclusion, they justify further exploration of this method of active immunization

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Anaphylactic Shock from Wasp Stings—Williams reviews the literature on severe general and fatal reactions due to anaphylaxis from bee and wasp stings and presents the case of a man who had been stung on the left hand and forearm by six or seven wasps He began to "itch all over," became extremely weak and nervous, frothed at the mouth," and collapsed within 15 minutes after the stings On admission to the hospital he was cyanotic and covered with perspiration and his blood pressure could not be obtained or pulsations felt at the wrist There was tachycardia Breathing was rapid, shallow, and stertorous, and the general appearance was that of a patient with a cerebrovascular accident The man was immediately given 1 cc of epinephrine subcutaneously, then 50 mg of diphenhydramine (benadryl®) hydrochloride intravenously Administration of oxygen by mask was started, followed by intravenously administered glucose in saline solution and blood This treatment caused a slight improvement, in that the blood pressure could be registered The patient was irrational and violent and had to be restrained, he was given amobarbital (amytal®) sodium and morphine and scopolamine On the fourth day the patient still required oxygen as well as restraints and sedation Then cortisone was started in 100 mg doses at eight hour intervals for three doses After this, great improvement could be seen It is believed that the cortisone was life saving, but it is also suggested that the patient might have responded more promptly had more epinephrine been given The use of epinephrine in adequate doses, antihistaminic agents, and general shock-combating measures is recommended as immediate first aid, to be followed by cortisone or preferably, corticotrophin in cases of anaphylaxis

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Hyaluronidase in Chronic Ulcers.—Since one of the causes of chronic ulcers is inadequate nutrition to the tissues, Ende felt that hyaluronidase might facilitate passage of necessary agents into an ulcerated area and thereby promote healing The first patient in whom hyaluronidase was used was a man, 25, who in childhood had had osteomyelitis in the left leg In June, 1950, an ulcer developed 3 in (7 62 cm) by 1¾ in (4 45 cm) and approximately ¼ in (0 64 cm) in depth The patient was treated for several months with penicillin and local applications He was then put on bed rest, and penicillin was continued for 10 days The ulcer did not heal Penicillin was stopped, and bed rest continued One ampule of 400 viscosity units of hyaluronidase dissolved in 1 cc of water was applied to the lesion daily The patient noted significant relief of pain in 24 hours Within one week the ulcer was approximately half its original size, and it healed in three weeks The second patient was a woman, 65, who had had leg ulcers for 40 years One ulcer covered an area 5½ in (13 97 cm) by 4½ in (11 43 cm), a smaller one measured 1 in (2 54 cm) by 1½ in (3 31 cm) This smaller ulcer healed under treatment with hyaluronidase in four weeks, the larger ulcer was reduced in size and granulated to the level of the skin in two and one half months It is ready for skin grafting Similar favorable results were obtained in a third patient. All three had rapid diminution in pain Ende feels that further investigation of the use of the drug in wound healing is indicated

Texas State Journal of Medicine, Fort Worth

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Cervical Spine Injuries J E. Watson Jr—p 341

West Virginia Medical Journal, Charleston

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Pneumoperitoneum in the Newborn M Birdsong and E M Frame—p 173
Relation of Public Health Department to Private Practice of Medicine R. A. Kennedy—p 177
Diagnosis and Treatment of Renal Tumors G A. Humphreys—p 180
Choice of Medical Students with Especial Reference to Nature and Usefulness of the Medical College Admission Test. G S Dodds and E J Van Liere—p 184
Chylous Ascites (Report of Case) R. E. Burger—p 186

FOREIGN

Acta Physiologica Scandinavica, Stockholm

22 299 390 (No 4) 1951 **Partial Index**

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*Quantitative Study on Alcohol Barbiturate Synergism. F Sandberg. —p 311
Effect of Trichlorethylene on Organism A Ahlmark and S Forssman —p 326
Disappearance of Injected Histamine from Blood Stream N Emmelin —p 379

Alcohol Barbiturate Synergism —Sandberg s studies demonstrate that small, subhypnotic doses of several short acting barbiturates produce a marked potentiation of the effect of alcohol measured by the diminished induction time of anesthesia The degree of potentiation varied with the dose and the type of barbiturate derivative Hexobarbital was found to produce the highest degree of synergism followed by 1-carbethoxymethyl-5, 5-diallylbarbituric acid, amobarbital, thiopental and cyclobarbital A test has been developed for the analysis of the differences in the degree of potentiation No correlation is found between the degree of potentiation and hypnotic efficiency or induction time Sandberg believes that discrepancies between his observations and those of observers who noted a retarding effect of alcohol on the anesthesia induced by barbiturates may be due to the differences between short acting and long acting barbiturates The clinical use of the combination of alcohol and a short acting barbiturate was reported by Rachek in 1945, who stated that the synergistic action of alcohol and hexobarbital has been utilized to advantage in intravenous anesthesia The present investigation indicates that a potentiative, not a simple additive, type of synergism exists between alcohol and the short-acting barbiturates and that the degree of potentiation varies with the dose and the type of the barbiturate derivative

British Medical Journal, London

1 1405-1462 (June 23) 1951

Some Impressions of an Ophthalmologist A W S Sichel —p 1405
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*Antihistamine Treatment of Acute Nephritis D Lawson —p 1423
Treatment of Psychoneurosis Modified CO_2 Abreactive Technique W L. Milligan.—p 1426
*Idiosyncrasy to Aureomycin P D Bedford —p 1428
New Diluting Fluid for Eosinophil Count. T Manners —p 1429

Antihistamine Treatment of Acute Nephritis —Since most cases of acute nephritis follow a bacterial usually a streptococcic infection by one to three weeks it has been widely accepted that immunity responses are involved in the pathogenesis of the disease The known mediation of histamine or a histaminelike substance as a final common path in the production of a variety of hypersensitivity phenomena suggested a trial of one of the recently developed antihistamine drugs in the treatment of acute nephritis Some investigators obtained encouraging results with pyranisamine maleate ("anthisan) in the treatment of eight cases of acute nephritis Lawson tried this drug in the treatment of 33 consecutive cases of acute nephritis, alternate patients being treated with an antihistamine drug for 10 days Cases were followed for from six and 18 months This is a report on the first six months experience, during which period every child except one recovered completely Analysis of the total duration of activity shows that the patients treated with pyranisamine were consistently slightly slower in recovering. The report did not confirm the value of this agent in the management of acute nephritis Lawson feels that in a series like this, in which every child but one recovered within a few weeks or months it is not possible to study the effect of the drug on the long term prognosis

Idiosyncrasy to Aureomycin —The patient showed sensitivity to acetylsalicylic acid (nausea, vomiting and urticaria) and penicillin (eczematous dermatitis) Despite the known sensitivity to penicillin, he had been given 1,500,000 units of penicillin, under a heavy umbrella of antihistaminics and ephedrine, for cellulitis of the face About four weeks later he was given 1 gm of aureomycin by mouth for influenza with fever and a cough productive of purulent sputum Ten minutes later he noticed itching of the groin and between the outer toes of both feet sites which had been infected with ringworm some years previously Two to three minutes afterward dyspnea developed, accompanied by stridor and cyanosis The eyes protruded and the face became purple A crowing inspiration ended the inspiratory difficulty, which was succeeded by a typical asthmatic attack that subsided spontaneously after two hours Edema (a confluent urticaria) of the scrotum, hands, feet, and face reached maximum about two hours afterward and slowly subsided about 36 hours later The view that this alarming episode was due to aureomycin was strengthened by a strongly positive skin test There is possibly an antigenic relationship between the products of growth of various molds and fungi Though they may be uncommon, severe reactions to the newer antibiotics should be anticipated, particularly in persons known to be sensitive to penicillin

Canadian Journal of Medical Sciences, Ottawa

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Influence of Oral Ascorbic Acid Administration on Adrenal Cortical Response to ACTH F R. Skelton and C. Fortier —p 100
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Peptidase Activity in Human Serum Under Various Pathological Conditions in Pregnancy and Following Administration of ACTH A M Cullen V T Barber M K. Birmingham and K. Stern —p 114
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Edinburgh Medical Journal

58 197-260 (May) 1951

Applications of Chemical Defence Research in Medicine R A Peters. —p 197
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Id Part II A. Lewis —p 231
Tuberculosis in General Children s Hospital Pathologist s Experience A R Macgregor —p 248

Hoja Tisiológica, Montevideo

11 1-108 (March) 1951 **Partial Index**

*Treatment of Metastases of Lung A Victorica —p 52
*BCG Test in Children who Received BCG Vaccination at Birth R Gorlero Bacigalupi —p 60

Treatment of Metastases of Lung.—According to Victorica, tumors that most frequently metastasize to the lung are, in order of frequency, carcinoma, sarcoma, chorionepithelioma, and tumors of the uterus, ovaries, and testicles Symptoms of pulmonary metastases are the same as those of primary cancer of the lung The roentgen aspects of the metastases are those of miliary nodules or of round or oval shadows Biopsy and aspiration of bronchial secretion for identification of neoplastic cells are of diagnostic value Pulmonary lobectomy is indicated when the metastases are solitary, when the primary tumor has been removed and the biopsy near the primary foci is negative for cancer, and when the general condition of the patient is satisfactory and the operation as planned, should not greatly impair respiration A patient is reported on whose left hand was amputated at its lower third because of sarcoma of the hand Upper left lobe lobectomy was performed 20 months later for a single large metastasis of the lobe The two carcinomas, that of the hand and of the lung, were of the same histological type The patient is in good health and able to work six months after the operation

BCG Test —Gorlero Bacigalupi observed 770 children, of ages from birth to the age of 10 years who had had BCG vaccination at birth by the Rosenthal multipuncture technique Skin puncture tests were made simultaneously in both forearms through a drop of old tuberculin in one forearm and a drop of BCG vaccine in the other Results, which were read 72 or 96 hours later, were positive with the BCG test in 701 cases (91 03%) and with the tuberculin test in 484 cases (62 85%) The hypoergic type of reaction was the same with either test The percentage of positive reactions after vaccination increases from birth up to the age of 3 years and then gradually diminishes The author concludes that with the BCG test there is a higher percentage of positivity and that, although the hypoergic responses predominate with both techniques, the responses to the BCG give a higher percentage of papules between 6 and 10 mm in diameter The results of these observations indicate the need to revaccinate children about three years after the first vaccination

Journal of Clinical Pathology, London

4 129 252 (May) 1951

Whither Clinical Pathology? Trends and Opportunities L. Whitby —p 129
*Polyarteritis Nodosa and Rheumatic' Diseases W Pagel —p 137
Haemagglutination Reaction in Tuberculosis G R F Hilson and S D Elek —p 158
Slide-Culture Technique for Determining Streptomycin Sensitivity of M Tuberculosis in Sputum S D Rubbo and D M Morris —p 173
Determination of Sensitivity of Myco Tuberculosis to Streptomycin R W Fairbrother and J E. Southall —p 183
Proteolytic Enzyme Test for Detecting Incomplete Antibodies J A. Morton and M M Pickles —p 189
Effect of Direct Electric Current on Normal and Antibody-Sensitized Red Cells K Goldsmith and J G Humble —p 200
Effect of Citrovorum Factor (Folinic Acid) on Megaloblasts in Vitro S T Callender and L G Lajtha —p 204
Reticulocyte Crisis After Effective Specific Treatment of Pernicious Anaemia R. Berlin —p 207
Sampling Error in Haemoglobin Determination R Biggs and M J Allington —p 211
Survival of Transfused Erythrocytes from Patients with Polycythaemia Vera. J S Elwood and H E de Wardener —p 218
Combined Fragility Test for Congenital Haemolytic Jaundice. S Varadi —p 221
Estimation of Sodium Gentisate in Plasma and Urine B W Meade and M J H Smith —p 226
Potassium Levels in Cerebrospinal Fluid After Death J K. Mason, W Klyne and B Lennox —p 231

Polyarteritis Nodosa and Rheumatic Diseases.—Pagel tries to clarify the following points (1) the early changes in polyarteritis nodosa and the question of the so-called fibrinoid substance, (2) some histological criteria reputed to distinguish polyarteritis nodosa from the rheumatic and pararheumatic' diseases, including 'temporal arteritis", (3) polyarteritis nodosa as the basis of Loffler's syndrome associated with dermatoses, and (4) the causal role of bacterial hypersensitivity in polyarteritis nodosa The studies reported were made on 18 cases The early changes appear to be subendothelial swelling due to permeation of fluid, followed by fibrinogen exudation and necrosis of the vascular wall A breach in the latter may be plugged by fibrin, or fibrin may be found both inside and outside the breached and necrotic vascular wall Polyarteritis nodosa differs from the rheumatic and 'pararheumatic" diseases (lupus erythematosus disseminatus, dermatomyositis, arteriolitis allergica, temporal arteritis) in its course and in the site and distribution of the lesions, but the basic histological change appears to be identical in all In polyarteritis nodosa, fibrin deposition and necrosis affect the vascular walls mainly, but extramural foci may occur and involve the collagen fibers, with lesions indistinguishable from the acute "infiltrative' changes in rheumatic fever, lupus erythematosus disseminatus, and dermatomyositis There is preservation of the argyrophil reticulin within the zone of collagen change In addition to these paravascular foci, pseudotuberculous necrotic lesions may occur in polyarteritis nodosa Finally, a granuloma resembling the Aschoff nodule and the changes seen in temporal arteritis may develop in the vascular wall On the other hand, rheumatic arteritis, as seen in rheumatic fever, may be indistinguishable from polyarteritis nodosa and the vascular changes observed in dermatomyositis and scleroderma Two cases are described of eosinophilic alveolitis in association with exfoliative dermatitis and asthma In both there is evidence of burnt-out polyarteritis nodosa and of a dissociation" of eosinophilia and arterial necrosis The events that lead to the explosive arterial lesion of polyarteritis nodosa indicate a hyperergy This hypersensitivity, which may involve a foreign or modified serum, or an abnormal protein, is comparable to the Arthus phenomenon and the type generally referred to as the anaphylactic type of allergy, but it may be due to a bacterial antigen, as shown by the use of streptococci in experiments on human volunteers

Journal of Pathology and Bacteriology, Edinburgh

63 181-364 (April) 1951 *Partial Index*

Cardio-Vascular Responses to Air Embolism G R Cameron S N De and A H Sheikh —p 181
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*Intimal Vascularisation and Atherosclerosis E Geiringer —p 201
Oedema and Capillary Anoxia R C Nairn —p 213
Myoneural Junctions and Toxic *Agents* F A *Denz.—p* 235
Antidiuretic Hormone of Posterior Lobe of Human Hypophysis C Cavellero and M Zanchi —p 249
Retention of Radioactive Strontium and Yttrium (Sr^{89} Sr^{90} and Y^{90}) *in* Pregnant and Lactating Rabbits and Their Offspring. B Kidman M L. Tutt and J M Vaughan.—p 253
Observations on Resistance of Bacterium Coli to Glycine J Gordon R A Hall and L H Stickland —p 285
Beta Toxin (Deoxyribonuclease) of Cl Septicum G H Warrack E. Bidwell and C L Oakley —p 293
Toxin Producing Diphtheria Like Organisms Isolated from Cases of Sore Throat R. Saxholm —p 303
Nasal Carrier Rates of Staphylococcus Pyogenes in Hospital Nurses. *P M Rountree* and R G H Barbour —p 313

Intimal Vascularization and Atherosclerosis—Geiringer reviews the history of the study of atherosclerosis, giving particular attention to intimal vascularization and thrombogenic atherosclerosis. The material for his study was derived from routine autopsies at the Royal Infirmary in Edinburgh and consisted of 300 aortas taken in their entirety and sections from 100 hearts, including the first inch of the anterior descending branch of the left coronary artery He stresses the following points 1 The normal arterial intima is an avascular structure 2 It acquires a secondary blood supply if it grows beyond a certain critical thickness 3 This critical thickness, which varies with each artery, is about 0 5 mm in the aorta and 0 35 mm in the proximal part of the anterior descending branch of the left coronary 4 Intimal vascularization occurs either through an extension of the adventitial plexus into and through the media or by retention of the vascular network of organizing mural thrombi When both processes occur *in the same vessel, anastomoses usually form* 5 This adventitious blood supply of the intima is liable to interference, and most of the clinical effects of atherosclerosis can be traced to the resulting ischemic necrosis of the intima Living atherosclerotic thickenings are rarely a source of trouble The vast majority *of vascular accidents* due to atherosclerosis occur in relation to necrotic plaques, and intimal vascularization is the forerunner of intimal necrosis

Lancet, London

1 1331-1374 (June 23) 1951

Treatment of Psychoneurotics Some Practical Considerations. W L. Neustatter —p 1331
Streptokinase as Adjunct in Treatment of Tuberculous Meningitis J Lorber —p 1334
Induced Asthma in Man H Herxheimer —p 1337
Primary Hydrocele and Its Treatment Review of 200 Cases D P Burkitt.—p 1341
Toxic *Hepatitis* Caused by Diaminodiphenylsulphone. D B Jelliffe —p 1343
*Erysipeloid of Rosenbach Review of 30 Cases J A MacDougall. —p 1345
Cor Pulmonale from Recurrent Pulmonary Embolism. *C. P Petch* —p 1346
*Delayed Effects of *Ultraviolet* Burns in Man M L. Thomson —p 1347
Gastro-Jejuno-Colic Fistula *C. C. Holman* —p 1348
Bullet Wound Through Both Frontal Lobes with Recovery J Siorach —p 1349
In Vivo Survival of Rabbit's Red Cell Recovered After Freezing. H A Sloviter —p 1350

Erysipeloid of Rosenbach—Erysipelothrix rhusiopathiae gives rise to three *forms* of infection in *man* (1) a mild, localized cutaneous infection, (2) a diffuse or generalized cutaneous eruption with constitutional *symptoms, and* (3) a septicemic form All of the 30 cases here reviewed fell into the first group They were observed in the course of 10 months (1949/1950) at St. Thomas Hospital in London The part infected was the hand or fingers The patients described a sensation of superficial itching or smarting, *coupled with a feeling* of tightness and stiffness of the under lying joints The lesion was an erythematous patch spreading from the site of inoculation, varying from pink to deep purple, with a fairly distinct raised margin, and hot but not acutely tender Three patients had systemic disturbances, with fever and malaise, and in one case, vomiting All the patients were outpatients No local application was given, but 28 patients were treated with the systemic administration of aqueous penicillin in doses of 200,000 or 500,000 units once or twice a day The two patients who refused penicillin injections were left untreated, and the lesions resolved spontaneously, the first in 10 days and the second in 14 Of the 28 patients treated with penicillin, 20 were cured after one course of penicillin, with total doses of from 800,000 to 2,200 000 units being given in from two to five and one half days Lesions recurred in six patients after a course of penicillin lasting two or three days with a dosage of 200,000 units twice a day Two patients did not return after the second or the third injection It appears that penicillin therapy should be continued until the lesion desquamates

Delayed Effects of Ultraviolet Burns.—It has been shown that after exposure to ultraviolet radiation there may be a reduction in sweating-rate, which is partly caused by occlusion of sweat gland ducts in the necrosed surface layer of the epidermis and probably partly by reduction of secretory pressure of sweat Thomson reports collapse in two men, apparently attributable to previous ultraviolet radiation, and the development of sun blisters in another case The two men had been acclimatized by 14 days of exposure to heat, working and resting intermittently according to the same routine for four hours in a climatic chamber The men collapsed in a heated room a day after receiving ultraviolet burns, one from the sun, and the other from an ultraviolet lamp They had withstood the environmental conditions (effective temperature 91 F) on control days without undue hardship The author says that two kinds of blisters may develop after ultraviolet burn The more important type arises between the dermis and the epidermis within 48 hours of injury, contains a plasmalike exudate, and should be treated like thermal second-degree burns The second type (sudamina) arises superficially in the corneum from the second day on after injury, contains sweat, and requires no treatment

Medical Journal of Australia, Sydney

1 637-672 (May 5) 1951

Some Points in Management of Varicose Veins. C H W Lawes. —p 637
*Syndrome of Gout. E G McQueen —p 644
*Haemorrhagic Conditions Connected with Thromboplastin Complex with Particular Reference to Inhibitors P Fantl and J A. McLean —p 650
Penetrating Injuries of Rectum E Wilson —p 654
Multiple Myeloma Review of Literature and of Eight Cases from Royal Melbourne Hospital D C Dowling —p 655
Some Observations on Poliomyelitis Epidemic at Stanthorpe Queensland 1951 R. L. Green —p 659

Syndrome of Gout.—McQueen advances the concept of "syndrome of gout," suggesting that the causes of gout are numerous and that the secondary effects of elevated blood uric acid, essential for the syndrome of gout, are manifold The tendency toward high uric acid level is usually hereditary, the gene determining the condition being an autosomal dominant which is obscured by endocrine factors in women during the child-bearing period The mode of action of this hereditary abnormality is still not proved, but circumstantial evidence suggests that it acts through the kidney in diminishing excretion of urates One important acquired cause of high uric acid level is excess production of uric acid Diseases of blood may be accompanied by a very high level of uric acid On numerous occasions gout has been reported in association with erythremia, pernicious anemia, and hemolytic anemia The other important cause of elevated uric acid level is renal deficiency, which, when sufficiently far advanced causes retention of uric acid Of 65 patients, 58 men and seven women, reported on by the author, 38 are considered to have had renal disease, as shown by urea retention, consistent albuminuria, or albuminuria with urinary deposit of red blood cells and casts Arteriolar nephrosclerosis is the lesion most consistently recorded in gout Many resemblances can be seen between the Kimmelstiel-Wilson syndrome and gouty renal disease, and it is suggested that elevated uric acid is a stress producing agent The prodrome of an acute attack of gout (increased electrolyte excretion) suggests temporary inadequacy of adrenal cortical secretion, as does the immediate relief of the acute attack by the administration of corticotrophin (ACTH) and cortisone

Hemorrhagic Conditions Connected with Thromboplastin Complex.—Seven patients, five males between 5 and 15, one woman 44, and one man 75, with hemorrhagic tendencies are reported Of the five male children, two were hemophiliacs with a positive family history Hemophilia is defined as a congenital deficiency disease due to lack of a plasma soluble precursor of thromboplastin If one assumes this concept to be correct, the laboratory diagnosis of hemophilia can be made by the following three tests 1 Determination of the whole blood coagulation time Delay indicates that the hemorrhagic tendency is due to intravascular causes 2. Determination of the plasma coagulation time with a series of dilutions of brain extract This test indicates deficiency in the thromboplastin complex 3 Determination of the plasma coagulation time with a mixture of patient s and normal plasma This test indicates whether the condition is due to lack of thromboplastin or is caused by an inhibitor According to clinical symptoms and results of laboratory tests two of the young male patients were true hemophiliacs, but there was no family history of bleeding Other workers have also reported male "bleeders" with a hemophilic defect without a family history of disease An acquired hemorrhagic condition occurring in both sexes and simulating hemophilia was found in the authors two adult patients The presence of thromboplastin antagonists could be verified It is known that the patients had acquired the hemorrhagic condition prior to blood transfusion Iso immunization against the antihemophilic globulin or against the thromboplastin has been considered However, antibodies reacting with normal plasma components were not detectable in the patients' plasma The source of the anticoagulant could not be established

Medizinische Welt, Stuttgart

20 729 764 (June 2) 1951 **Partial Index**

Vitamin B_1 in Treatment of Pernicious Anemia H Kleinsorge and G Klumbies —p 740
Nature and Symptomatology of Constitutional Hemolytic Icterus with Elliptopoikilocytosis and Increased Resistance of Erythrocytes. G Patrassi —p 744
*Inoculation Vaccinia Treatment with Aureomycin G Polemann —p 747
Treatment of Infectious Intestinal Diseases J Seiler and C. Gaedeke. —p 749

Aureomycin in Inoculation Vaccinia—A woman, 25 had been subject to eczema since the age of 10 The present disorder began with the appearance of some pustules around the mouth, to which the patient applied boric acid ointment and alcohol A physician injected calcium and prescribed an ointment, but despite this treatment the skin lesions advanced so rapidly that hospitalization became necessary Face, neck, and chest were covered with pustules and yellowish crusts and the face was edematous So far as the patient knew, she had not been in contact with newly vaccinated children, but the eruption occurred at a time when many children were being revaccinated This fact, the nature of the cutaneous lesions, and the demonstration of Paschen s inclusion bodies justified the diagnosis of inoculation vaccinia The cutaneous lesions and fever subsided rapidly with aureomycin therapy

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

95 1665 1728 (June 9) 1951 **Partial Index**

Prognosis in Erythrodermia and in Generalized Dermatoses J W H Mali —p 1675
*Pulmonary Disorders Caused by Molds P J van der Werff —p 1682.
*Treatment of Symptomatic Psychosis with Antallergan (Antihistamine Preparation) F J Tolsma —p 1690

Pulmonary Lesions Caused by Molds.—A patient was hospitalized with a diagnosis of asthma and chronic bronchitis His first severe attack had come on during the harvesting of rye His general condition remained favorable but then he declined rapidly The Pirquet and Mantoux tests were negative, and sputum examination yielded no tubercle bacilli but did reveal Staphylococcus aureus and Neisseria organisms as well as spores of molds Pulmonary carcinoma was considered Attempts to counteract the bronchobacterial factors by a protein preparation of apathogenic bacteria and particularly by penicillin proved ineffective When further sputum studies suggested the presence of molds and yeasts, treatment with neoarsphenamine was instituted and proved effective The author gives a detailed description of a second case in which bronchomycosis was associated with cavitation and mentions three other cases of pulmonary lesions caused by molds observed within a short period at an Amsterdam clinic Potassium iodide, creosote, and especially neoarsphenamine give good results in cases of this type The clinical picture of diseases generally referred to in the literature as bronchomycosis are in reality pneumonomycoses The condition may take the form of bronchitis, acute bronchopneumonia, or indurating pneumonia, but, as a rule, it greatly resembles tuberculosis In cases in which examination of the sputum for bacteria fails to clarify the etiology, molds and yeasts should be searched for The author comments on the culture and differentiation of fungi

Antihistamine Preparation in Symptomatic Psychosis.—Assuming that a symptomatic psychosis might be the result of an allergic encephalopathy, Tolsma used the synthetic antihistamine product antallergan" (N-dimethylaminoethyl N benzylaniline hydrochloride) in the treatment of three cases The usual dose was 80 mg three times daily Results were favorable In the three reported cases the symptomatic psychosis was preceded by influenza, pregnancy, and rheumatic polyarthritis, respectively One case is discussed to illustrate that symptomatic psychosis may be irreversible

Presse Médicale, Paris

59 909 932 (June 30) 1951

*Appearance of Pulp of Toes in Patients with Arterial Obliteration Its Prognostic Value R Leriche —p 909
Therapeutic Utilization of a Sulfonamide Compound with Enhanced Solubility A Ravina and H Chimènes —p 909

Appearance of Pulp of Toes in Arterial Obliteration —It is often difficult to determine whether a patient with arterial obliteration may be benefited by *arteriectomy* or ganglіectomy The appearance of the pulp of the toes of the patient is of value in establishing a correct prognosis Arteriography, performed on patients in whom the pulps of the toes were uniformly rose-colored, showed that there was reutilization of the main blood vessels below the thrombosed zone This reutilization is the essential prerequisite for the nutrition of the tissues Only the main blood vessels are capable of distributing the blood to all the tissues On the contrary, ivory white or purple appearance of the pulps of the toes is an unfavorable sign Although the pulps may occasionally regain their normal appearance after arteriectomy or gangliectomy, there is no certainty that the patient will be benefited by the intervention Comparative examination of the soles of both feet of the patient may also furnish valuable indications One completely ivory white sole and one normal sole may suggest an iliac obliteration If both soles are ivory-white, obliteration of the aorta or of both iliac arteries should be considered

Rassegna Medica Sarda, Cagliari

53 1-38 (Jan -Feb) 1951

Hyperglycemia Produced by Administration of Uric Acid in Albino Rats on a Diet Deficient in Sulfur G Liguori —p 1
*Pneumatosis Cystoides Intestinalis Clinical Study E Capovilla —p 7
Coagulants and Anticoagulants. R Camba —p 23

Pneumatosis Cystoides Intestinalis.—The occurrence of pneumatosis cystoides intestinalis is reported in two patients, a woman 25 and a man 28 who were admitted to the hospital with pain in the right side of the lower abdomen Diagnosis of chronic appendicitis was made When laparotomy was performed, gas filled cysts were observed in the ileocecal junction and in the ascending colon of the woman and in the omentum and the visceral peritoneum of the other patient Microscopic examination of the removed appendix of both patients revealed infiltration with neutrophil and eosinophil leukocytes in the parietal layers Microscopic examination of the removed fragments of the peritoneal serous membrane, in which gas-containing cysts were observed, showed that the cysts had a lining of endothelial tissue and an outer wall of connective tissue, with a few smooth muscle and elastic fibers Giant cells were not observed Roentgenologic examination without contrast medium was performed 24 hours after the operation and was negative in both patients The postoperative course was uneventful Both patients were in good health two years after the operation The exact etiology of pneumatosis cystoides intestinalis has not been established Various theories have been advanced It is believed that because of atrophy of the intestinal mucosa or a disturbance in its function of absorption an accumulation of gas producing substances may occur in the lymph vessels of the intestinal wall Pneumocysts then arise, and, by a process of osmotic equilibrium with the fluids of the organism, the gas comes to resemble air in composition Diagnosis of the disease is difficult, most of the 200 cases reported in the literature were discovered accidentally in the course of necropsy or, as in the author's cases, during exploration of the abdomen for other disturbances Pneumatosis cystoides intestinalis is generally associated with other intestinal diseases and does not require specific treatment Surgical or medical treatment of the associated disorder may simultaneously cause disappearance of symptoms of pneumatosis cystoides intestinalis Partial removal of the cystic wall is advisable when large subserous gas-containing cysts cause intestinal occlusion Intestinal resection should be performed only in cases in which occlusion is total and permanent This may occur especially in cases of submucosal pneumatosis

Revista Brasileira de Cirurgia, Rio de Janeiro

21 237-320 (April) 1951 **Partial Index**

*Treatment of Rectosigmoid Cancer S D Avila —p 251

Rectosigmoid Cancer —D'Avila reports on conservation of the sphincter in 50 patients of either sex operated on for rectosigmoid cancer in advanced stage Anterior resection was done in 26 patients, abdomino-endo-anal proctosigmoidectomy in 17, and posterior resection in two Five patients died in the postoperative period from diseases not related to cancer In the group of patients who had anterior resection, special reference is made to 17 patients who had the operation between 1948 and 1950 There were five local recurrences (29 4%) Three patients with recurrences and one with metastasis to the liver died within one or two years from the operation Thirteen patients (76%), including two with local recurrences, are living, between one month to two years after the operation In the group of 17 patients who had proctosigmoidectomy, local recurrences occurred in three cases (11 7%) One patient with recurrence and one with metastasis to the liver died within two years after the operation Fifteen patients, including two with recurrences, are living from three to seven years after the operation The two patients who had posterior resection had no local recurrences They are living, two months and one and a half years after the operation, respectively The author emphasizes the clinical anatomic, pathological, and social importance of the conservation of the sphincter in patients with rectosigmoid cancer He concludes that primary resection gives better functional results in cases of rectosigmoid cancer than abdomino-endo-anal proctosigmoidectomy and posterior resection The survival period of five years after the operation cannot be evaluated, as only four patients in the group lived between five and seven years after the operation

Semaine des Hôpitaux de Paris

27 1813 1842 (June 6) 1951 **Partial Index**

*Paraaminosalicylic Acid in Treatment of Nonmiliary Pulmonary Tuberculosis Roentgenoclinical Study P Véran and U Guinot —p 1813
Two Sulfone Compounds Associated with Paraaminosalicylic Acid in Treatment of Pulmonary Tuberculosis (Roentgenoclinical Study) P Véran N Rist J Cottet and U Guinot —p 1820
*Resistance of Mycobacterium Tuberculosis to Paraaminosalicylic Acid N Rist, P Véran B Ballet and others —p 1823

Paraaminosalicylic Acid Therapy in Pulmonary Tuberculosis.—Paraaminosalicylic acid was given to 233 patients with pulmonary tuberculosis for periods varying from 50 days to eight months, with a follow up period of three to six months All the patients had a complete rest for several weeks before institution of treatment Twenty to 25 gm of the drug (30 gm for patients with body weight over 70 kg) was given in eight divided doses in 24 hours, five days a week for six weeks Treatment was continued for two to eight months with eight-day interruptions every six weeks for repeated laboratory tests Treatment was terminated because of intolerance, therapeutic failure, lack of improvement for four to eight weeks, or institution of collapse therapy In patients in whom the drug is effective, the symptoms subside rapidly within several weeks, if response is slower, continuation of the treatment for two or three months more is not only useless but harmful, since it usually causes clinical and bacteriologic resistance to the drug The antipyretic effect of the drug and the reduction and clearing of the sputum induced by the drug were pronounced, resulting in functional improvement, which, although only temporary, may be of great importance in certain patients The authors do not share the opinion of others that patients treated with paraaminosalicylic acid may no longer be considered as bacteriologic carriers Patients with recent nodular lesions responded best to the drug, while those with cavitary lesions were therapeutic failures Clear or suppurative effusions associated with intrapleural or extrapleural pneumothorax were not benefited A favorable effect of the drug was observed in patients with acute serofibrinous pleurisy, particularly with intravenous administration The drug was best tolerated when administered by intermittent intravenous drip, but roentgenologic improvement was not increased by this route of administration Although less effective than streptomycin, paraaminosalicylic acid has a definite place in the treatment of pulmonary tuberculosis, because of the bacteriologically satisfactory results from combined treatment with streptomycin or sulfones and because of its favorable effect on fever and sputum

Resistance of Bacillus Tuberculosis to Paraaminosalicylic Acid—Forty three patients with cavitary pulmonary tuberculosis were treated with paraaminosalicylic acid (20 25 gm daily by mouth) for eight to 36 weeks The sensitivity of Koch's bacillus to the drug was determined in vitro Strains to be considered resistant are those yielding visible growth in culture in Dubos medium containing 2 5 γ of paraaminosalicylic acid per cubic centimeter three weeks after the inoculation of 0 01 mg of bacilli (moist weight) into 5 cc of medium Before treatment, 11% of the strains were resistant, after 70 days of treatment 61% were resistant, after 126 days 88%, and after 182 days 100% Comparison of the curves of resistance of Koch s bacillus to paraaminosalicylic acid in the course of treatment to those of streptomycin resistance in the course of streptomycin therapy showed that the incidence of resistance to paraaminosalicylic acid equaled that to streptomycin This resistance is responsible for the inefficacy of the treatment Resistance should be prevented by limiting the duration of treatment with paraaminosalicylic acid alone to four to six weeks and by limiting the indications to noncavitary forms of tuberculosis and to using the drug occasionally for preparatory treatment preceding surgical collapse therapy for cavitary tuberculosis In those cases in which prolonged streptomycin therapy may be anticipated it should be combined with paraaminosalicylic acid treatment starting the fifth week at the latest In those cases in which streptomycin is contraindicated, combined treatment with sulfone compounds and paraaminosalicylic acid should be practiced

27 2109 2168 (July 2) 1951

*Direct Epicardial Electrocardiograms (Electrograms) Obtained in Course of Five Surgical Interventions on Human Heart G Carouso H Chevalier B I L[illegible]tscha and J Lenègre —p 2109

Angina Pectoris and Calcific Aortic Stenosis Twenty Anatomicoclinical Observations A Mathivat, D Lembessis and R Paulon —p 2119

Coagulability of Blood in Cardiac Decompensation Before and After Treatment J L. Beaumont and J Lenègre —p 2128

Epicardial Electrocardiograms from Human Heart.—In the course of surgical interventions 27 epicardial electrocardiographic tracings were taken directly from the hearts of five patients Of these, three with right ventricular hypertrophy were subjected to subclavicular pulmonary anastomosis for tetralogy of Fallot, one with left ventricular hypertrophy was subjected to resection for coarctation of the aortic isthmus and one with an almost normal heart to ligation of patent ductus arteriosus The exploring electrode was connected with the wire of the unipolar precordial leads, and the indifferent electrode was connected with the central terminal of Wilson as for unipolar precordial recordings The sterilized exploring electrode was inserted through a buttonhole incision of the pericardium, 3 to 5 cm in length and was brought into immediate contact with various areas of the epicardial surface, without interposition of cotton This was done without causing any immediate or late untoward reactions The conclusions drawn from the direct tracings were as follows 1 In patients with right ventricular hypertrophy, various types of R, RS, Rs and rS were observed, according to the explored areas of the right ventricle, and types of qRS and QRS complex were obtained with the electrode exploring the left ventricular epicardium When the electrode is placed on the right ventricle, the major deflections of the R wave express well the variations of the potential of the right ventricular epicardial surface, particularly in the dense area of the right border and of the supraventricular ridge When the electrode is placed on the left ventricle, the major deflections of the S wave accurately show the variations of the potential of the hypertrophied right ventricle The types rS or RS of the hypertrophied right ventricles manifest variations of the potential of certain zones of the epicardial surface of the right ventricle, such as the trabecular zone and the anterior surface between the trabecular zone and the infundibulum pulmonis 2 In the patient with left ventricular hypertrophy the direct leads revealed tracings of rS and RS types at all the areas of the right ventricular epicardium and of qR type at the left ventricular epicardium 3 The direct electrocardiographic tracings obtained from patients with right or with left ventricular hypertrophy resembled closely the tracings obtained by the unipolar precordial method, this shows the high diagnostic value of Wilson and co workers' unipolar precordial recordings 4 The tracings obtained with direct epicardial leads revealed that even in true right ventricular hypertrophy the left epicardial surface (left border and posterior aspect of the left ventricle) shows an initial electronegativity This observation proves that the first cardiac vector moves from the left to the right, even in the presence of great changes in the weight relationship between the two ventricular masses (right ventricular hypertrophy)

Strahlentherapie, Munich

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Histological Investigations on Immediate Reaction of Cell Nucleus of Walker Carcinoma of Rat Following Application of Ultrasound Waves K. Woeber —p 207

Changes in Cell Nuclei Following Application of Ultrasonic Waves G Asche —p 215

Influence of Ultrasonics on Wassermann Reaction of Serums from Syphilitic Patients K Woeber J Zinzius and G von Wenzlawowicz. —p 226

Histological Examination of Excised Carcinomas After Preoperative Roentgen Irradiation H G Stoll.—p 310

*Histological Type and Response to Irradiation in Carcinoma of Uterine Cervix E Schüller —p 321

Histological Type in Carcinoma of Uterine Cervix—Schuller analyzed the records of 1,160 women with carcinoma of the uterine cervix who had been treated by irradiation In only 733 was the histological material adequate for complete analysis For estimation of sensitivity to irradiation Pendl s histological classification of cervical carcinomas is superior to Glücksmann s, which leaves too much to subjective interpretation, giving too much attention to the gross pathologic aspects and not enough to the detailed histological structure Pendl s classification divides the tumors into various types that show a characteristic response to irradiation The cases reviewed here corroborated Pendl s claim that the predominance of spindle shaped cells in the mucosal type and the slightly differentiated carcinomas of the parvicellular and macrocellular intermediary type were the ones that responded best to irradiation The incidence of the different histological types in the cases reviewed here corresponded largely with figures given by Pendl The histological type of a cancer of the uterine cervix not only permits an estimate of its responsiveness to irradiation but can also aid in the decision as to whether surgical treatment is advisable Cylindrical cell cancers and certain mucosal types of cancers are not responsive to irradiation and radical surgical treatment is therefore advisable in these types Carcinomas surrounded by eosinophilic infiltrations seem to have a good prognosis as regards response to irradiation

BOOK REVIEWS

The Neuroses: Diagnosis and Management of Functional Disorders and Minor Psychoses By Walter C. Alvarez, M D Cloth. $10 Pp 667 W B Saunders Company 218 W Washington Sq Philadelphia 5 7 Grape St. Shaftesbury Ave, London W C.2 1951

Dr Alvarez has attempted to bring before the medical profession 45 years of experiences in treatment of disturbed patients Some of the problems could be understood by a study of the disease, but many of them could be understood only by the study of the persons who had them In an era when persons are conscious of disease, Dr Alvarez has attempted to improve the physician's approach to the person who has become the patient

His approach, as synthesized in 600 pages gleaned from a vast and varied experience in internal medicine, is fundamentally intuitive and empiric It is based on a common sense evaluation by a sympathetic physician-counsellor who is cognizant of his patient's hopes and aspirations, fears frustrations, and obligations, as well as his physical make up and his hereditary endowments

Dr Alvarez tends to place much more emphasis on heredity than on environment The role of each factor is open to a great deal of debate at the present time His approach is based on experience with a given problem in a given patient rather than on a dynamic psychiatric evaluation of the individual case, as one would be led to believe by the title of the book Even though Dr Alvarez attempts to describe and catalogue certain criteria in the neuroses and psychoses, he succeeds more in documenting his personal experience in a vast number of instances, in which he reasons from a particular case to the general principle in drawing his conclusions While this experience makes interesting reading and may be helpful in a general way to both practitioner and internist, it may be difficult to convey effectively to the reader an approach that is so intuitive No well-defined concept of the neuroses is presented from either an etiological or a diagnostic point of view

However, Dr Alvarez does succeed in offering something of the essence of the manner in which an astute practical, and sympathetic clinical mind is able to handle the neurotic disturbed patient at the level of the nonpsychiatrist

Chronic Ulcerative Colitis (Thrombo-Ulcerative Colitis) By J Arnold Bargen M D Publication number 101 American Lecture Series monograph in American Lectures on Abdominal Viscera edited by Lester R. Dragstedt M D Chairman Department of Surgery University of Chicago School of Medicine Chicago Cloth $2 Pp 62 with 3 illustrations. Charles C Thomas, Publisher 301 327 E Lawrence Ave Springfield Ill Blackwell Scientific Publications Ltd 49 Broad St. Oxford England Ryerson Press 299 Queen St W Toronto TB 1951

Probably no other living physician—or even any physician in the future—can have the experience that Dr Bargen has had with ulcerative colitis This short monograph gives a critical review of his clinical experience He has discussed adequately the diagnosis, with all its ramifications, and the complications that might ensue The treatment has the usual method outlined for any abdominal disease that is as disabling as ulcerative colitis Diet is an important factor Curiously enough, however, Dr Bargen does not rely so much on vaccine therapy now as he did in the past, and he puts special emphasis on the use of sulfonamides His experience with antibiotics is comparable to that of others with fewer patients, but he has come to the same general conclusion as to their therapeutic value The author recognizes that there is some value in parasympatholytic drugs and also in barbiturates

From a surgical point of view he recommends that ileostomy precede a colectomy Certainly no one can disagree that in a patient with a long standing chronic, irreversible disease, ileostomy should precede colectomy and that colectomy should be the operation of choice, as he suggests Finally, in discussing treatment, Dr Bargen does give some lip service to the psychosomatic relationships and discusses the time honored approach of the average physician to psychosomatic aspects of this disease

At the outset, on page 5 of the introduction, he says, "Anxiety and emotional upsets do not cause ulcerative colitis, but its progression and failure to respond to treatment may well be aided and abetted by an unhappy frame of mind The mental state of the patient should be observed and psychosomatic relationship to the disease should be discussed in a guarded manner" This use of the words "in a guarded manner" is questionable. Should not the patient become acquainted with the fact that *there might be psychological* reasons and emotional factors that might be intimately connected with his disease? Should not a patient be taken into a physician's confidence and be told of the etiological and life situations that might interfere with the normal progress and healing in any disease?

Despite these controversial points of view, this monograph will serve excellently for the clinicopathological diagnostic approach *to what Dr Bargen calls "thrombo ulcerative colitis"* He outlines the more or less standard medical management, even including the rather temporary results with corticotropin (ACTH) To those unacquainted with the clinical picture of this disease, organic information elicited should prove of distinct help and edification

Introduction to a Psychoanalytic Psychiatry By Paul Schilder M.D Ph D Authorized translation by Bernard Glueck M D Cloth $3.25 Pp 178 International Universities Press Inc 227 W 13th St New York 11 1951

This book is a translation from the original in German, stimulated by the translator s belief that the book represents the first attempt at a systematic presentation of clinical psychiatry on a psychoanalytic basis Schilder s agreement with Freudian opinion on the clinical symptom-complexes of psychiatry is illustrated in the contention that symptom-complexes ordinarily embrace three types of phenomenon those representing remains of a normal state or of neurosis, phenomena of a residual nature, those representing the detachment of the libido from its object, phenomena of regression, and those representing attempts at recovery

The opinion is expressed that psychoanalytic psychology has furnished psychiatry with the possibility of eliminating artificial lines between neuroses and psychoses and between neuroses and so-called normal psychological manifestations It thereby makes possible the extension of the understanding of psychoanalytic psychiatry to general problems of human conduct that lie outside the strict field of clinical psychiatry

The book describes in detail the concepts of ego ideal, ego instincts, and phenomena of hypochondriasis, depersonalization, repression, and narcissism Other chapters consider the basic factors underlying the major psychoses

Modern Trends in Paediatrics Edited by Sir Leonard Parsons, M.D F R.S F R.C P Cloth $12 Pp 601 with 110 illustrations. Paul B Hoeber Inc. (*Medical book department of Harper & Brothers*) 49 E 33rd St. New York 16 1951

This is a collection of articles written by contributors who are known for their excellence in the fields they discuss. In no sense has the editor attempted to survey the entire subject of pediatrics He has selected topics on the basis of recent advances or of present interest in the field The chapter topics vary from a discussion of preventive pediatric services recent trends in the United Kingdom, to hemolytic disease of the newborn Some of the chapters present new information, and some contain better known information in a well-organized manner Owing to the necessary brevity of the articles, several contributors discuss in chronological fashion the findings and publications that have marked progress The bibliographies accompanying these chapters are excellent

Because of the composition of the book and the limited number of subjects that are presented in detail, it is not a general reference or textbook It would be of greatest interest to the persons with pediatric training who might wish to read articles that concisely summarize the available information on various trends in pediatrics

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The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated

Spezielle Pathologie der Krankheiten des zentralen und peripheren Nervensystems Von Dr Gerd Peters Professor der Neurologie und Psychiatrie an der Universität Bonn Cloth 56 marks. Pp 437 with 214 illustrations Georg Thieme Diemershaldenstrasse 47 (14a) Stuttgart O agents for U S A Grune & Stratton Inc 381 Fourth Ave New York 16, 1951

In this book, dedicated to Spielmeyer, the specific pathology of the diseases of the central and peripheral nervous systems is discussed in a well-organized fashion and documented by well-chosen and well reproduced illustrations, most of them photomicrographs An attempt is made to correlate anatomic with functional alterations and, not very extensively with the clinical picture In addition to inflammatory circulatory, degenerative, traumatic, and tumorous lesions and malformations, the effects of chemical and physical agents are extensively discussed This is followed by an unusually useful compilation of the anatomic alterations of the nervous system in the various internal medical diseases, and finally by a discussion of the hypothalamic pituitary syndrome A large amount of information is compressed into a relatively limited space and the style is clear A small number of references are given as footnotes Almost all the information given can be found in comparable books in English, nevertheless the unusual completeness of some of the chapters may make the study of this book valuable to the American internist, pediatrician and pathologist looking for information in neuropathology

Tuberculosis in the Aged. By Erik Tengve Med. Lic. Sthlm [Thesis M D Uppsala University] Translated by Klas Magnus Lindskog Paper Pp 114 with 3 illustrations Orlel Blombergs Nya Aktiebolag Lindesberg 1951

In this monograph Tengve reviews the literature on tuberculosis in the aged He discusses symptomatology and classification of types and the incidence of tuberculosis in Sweden in several age groups including that of the aged The drop in the tuberculosis mortality rate in Sweden, chiefly in the age group 20 to 30 accentuates the mortality rate in the age group over 60 Tuberculosis in old persons has thus acquired a mounting importance The author suggests also that the relatively high incidence in the aged may be a relic from the times when the tuberculosis mortality rate in Sweden was much higher than it is now and that these facts might justify the assertion that in 10 or 20 years time we will witness a significant diminution of the general death rate in tuberculosis

Analysis of cases shows that the percentage of open cases is much higher in old persons with tuberculosis than in other tuberculous persons It was found however, that most of the older patients with tuberculosis had had the disease more than a year before thev were admitted to the hospital These persons who in most cases had chronic and open tuberculosis, must have const ed a source of infection especially for their families It was demonstrated that about one third of all the children and grandchildren in the families of affected persons as a rule had or had had manifest tuberculosis of the lungs It was also shown that about one fourth of all the cases were known to the dispensaries before the patient s admission to the hospital This extremely careful and well reasoned summary has a significant application to the problem of control of tuberculosis this country

Das Elektrokardiogramm: Theorie und Klinik Von Dr med Hans Schaefer o Professor und Direktor des physiologischen Instituts der Universität Heidelberg Cloth 55 marks Pp 556 with 349 illustrations. Springer Verlag k Reichpietschufer 20 Berlin W 35 (West Berlin) Neuenheimer Landstrasse 24 Heidelberg Göttingen 1951

This extensive monograph on the electrocardiogram represents a significant contribution to the subject The monograph s strength lies in its handling of theory The clinical aspects are less satisfactory and the section on arrhythmias is not so outstanding The author has taken the opportunity in this monograph to expand the important contributions made by himself and his co-workers to the theory of electrocardiography

The first section deals with the theory of action potentials the second, with its application to the actual recording of cardiac events Use is made of the monophasic curve, of current flow inside and outside the muscle cell, of the depolarization and repolarization processes, and of vector analysis Also considered is the concept of solid conductors The remaining sections deal in turn with the QRS complex the S T and T complexes, and the arrhythmias The monograph closes with a consideration of chest leads

A mass of data are presented in this tome It is lengthy and repetitious at times, as would be expected from the traditional German style of presentation It embodies some extremely stimulating ideas, which do not always parallel teachings current in this country For example the concept recently advocated by Robb, that the conduction system stimulates the heart muscle segmentally, making it, as it were, a series of islands innervated ' by the conduction system, carries with it a great many possibilities In considering the T wave, the author points out that in addition to the contour determined by the ventricular gradient, which has a vector opposite in direction to that of QRS, T contour is influenced by another vector directed from base to apex, determined by a metabolic gradient , and in the case of injury by a third vector oriented in a direction opposite to the vector depicting the injury S-T deviation

The author makes use of vector analysis in the frontal plane based on the Einthoven triangle concept As a matter of fact except for the more or less isolated sections at the end dealing with precordial leads the discussion is concerned primarily with the frontal plane The author points out that the unipolar lead connection, even when the electrode is on the heart itself, has so much extrinsic distortion in it that the use of the R wave peak in such leads to determine the onset of the intrinsic deflection is fraught with error He favors, generally the dipole field theory, in which all regions of the heart have somewhat equal influence on the electrocardiogram Actually, each region has an influence varying with the square of the distance from the electrode and directly with its thickness and area There are some elaborate mathematical developments, particularly in regard to precordial leads In employing mathematical formulation and vectors, the author points out that they are only approximations of the actualities, owing among other things to the fact that the field surrounding the heart is not homogeneous

This monograph is highly recommended to the serious student of electrocardiography It is not suitable for the beginner or casual reader The stimulation, the new ideas, and the reorientation toward some of our traditional," though recently developed, views on electrocardiography will more than compensate anyone for the energy employed in unravelling the details Merely a study of the theoretical presentation by means of the diagrams will be extremely illuminating

DeLee's Obstetrics for Nurses By M Edward Davis M D Joseph Bolivar DeLee Professor of Obstetrics and Gynecology University of Chicago and Catherine E. Sheckler R.N M.A Assistant Professor of Nursing Education University of Chicago Chicago Fifteenth edition Cloth $4.50 Pp 673 with 387 illustrations W B Saunders Company 218 W Washington Sq Philadelphia 5 7 Grape St. Shaftesbury Ave London W C.2 1951

This is a well-organized, well integrated, and beautifully written textbook of obstetrics for nurses Eminent in their own fields, the authors have recognized essential facts and procedures for nurses, presenting them in concise form with an added pleasant readableness Obstetrics and obstetric nursing is a vast field with ever-broadening horizons The quality of this book is greatly enhanced by the artful presentation of recent advances in the immediate and allied spheres by contributing authors proficient and practiced in their subjects

Particularly gratifying are the chapters on community aspects of maternal and infant care, home nursing, and the emotional aspects of pregnancy The nurse s role is a signal one in the area of prenatal care, the greatest contributing factor in the reduction of maternal and infant morbidity and mortality rates The marked advances in these phases engender interest and competence in the nurse and therefore, serenity and confidence in the patient and her family

Figures and statistics are accurate and compare with those cited from other large surveys in recent literature Illustrations are excellent and completely up to-date, many being photographs taken in the authors clinical field The authors have retained the unit format of previous editions and have succeeded in adequate revision plus recent bibliographies A fine sense of human devotion, a true philosophy of medicine pervades the book

The Collected Papers of Adolf Meyer General Editor Eunice E Winters. Volume I Neurology With Introduction by Louis Hausman M D Professor of Clinical Medicine (Neurology) Cornell University Medical College New York Volume II Psychiatry With Introduction by Sir David K Henderson M D F R.C P Professor of Psychiatry University of Edinburgh Edinburgh Cloth. $30 per set of 4 volumes Pp 693 with illustrations 674 with portrait Johns Hopkins Press Homewood Baltimore 18 1950 1951

Adolf Meyer was the proponent of important psychiatric theories and a physician of diverse interests, among which can be listed medical education It is extremely unusual that a man of these qualifications should not have written a book Instead of this, Dr Meyer during his lifetime had the occasion to publish more than 250 papers in many European and American journals The books he did not publish have been published for him in the form of his collected papers This set will comprise four volumes Volume 1 is devoted to Meyer s neuroanatomic, neurological, and neuropathological papers Review of these papers makes abundantly clear his wide range of interests and his keen perception of basic principles His work on the optic radiation, a portion of which bears his name (Meyer's loop) is a model of correlation of evidence from several disciplines The neuroanatomy of the optic radiation was worked out with great care The evidence from pathological lesions was brought to bear on the anatomic principles, and then both the anatomy and pathology were given clinical application Though some of the theories that Dr Meyer propounded on the functioning of the nervous system are probably outdated, his observations are always worth reading and at times are a model of description

It is fitting that the volume on psychiatry (Volume 2) should follow the one on neurology This is both chronologically and developmentally correct in the reconstruction of Dr Meyer's interest in medicine He made no great secret of the fact that his psychiatric concepts had proceeded from his interests in the basic neurological sciences, and expressed this in calling his approach psychobiological In view of the recent emphasis of psychoanalytical principles in psychiatry it may seem almost archaic to contemplate some of the Meyerian theories However, a review of his papers in psychiatry is provocative on many points, two of which may be mentioned First, it is amazing how many of Dr Meyer s concepts now seem commonplace This, however, is only because they are taken for granted, and their universal applicability only adds to Dr Meyer s fame in originally propounding them Secondly, it is refreshing to read some of his appraisals of psychoanalytical theories It seemed a characteristic facet of his greatness to be able to give just due to men and to theories that might be considered opposed to his In these days when discussion between various psychiatric schools brings more heat than light Meyer s inherent fairness seems like a world apart

The two volumes in many ways are complementary to each other The purpose of the editor was to present Meyer's views of psychiatry and neurology as he expressed them through his papers In some sections of the volumes one wishes that critical correlation and evaluation had been attempted This, however, was not the editor s purpose Her intentions were to let Adolf Meyer speak for himself This he does in a lucid and instructive manner

Problems of Consciousness Transactions of the First Conference, March 20 21 1950 New York, N Y Edited by Harold A Abramson M D Cloth $3 Pp 200 with 15 illustrations Josiah Macy Jr Foundation 565 Park Ave New York 21 1951

This is a verbatim report Participants in the conference were 18 outstanding scientists from the fields of psychology, psychiatry, physiology, biology, embryology, and zoology Discussion material is presented on an informal basis and centers around the problem of sleep wakefulness cycle, psychoanalytic concepts of sleep and dreams, perception of pain, phenomena of hypnosis and consciousness and the chemistry of time

The major purpose of the conference was to attempt to overcome the difficulties in communication both emotional and semantic between the many disciplines involved in the discussions and thus, through mutual understanding, to move toward a unification of interpretation in all fields of science, so that a science of man ' might be developed in which medicine is considered to play a central role

Surgical Pathology of the Mouth. By E Wilfred Fish C B E., M D Ch B Dental Surgeon St Mary s Hospital London Cloth. $10 Pp 463 with 236 illustrations J B Lippincott Company 227 231 S 6th St., Philadelphia 5, Aldine House 10-13 Bedford St London W C.2 2083 Guy St., Montreal 1951

The author has written this textbook for the dental student or the practitioner as representing the irreducible minimum of pathology necessary for an understanding of daily practice and for prediction of results The book is not intended to replace or even approach the content of a textbook on general pathology Each chapter closes with a summary that is largely a restatement of the material content rather than an epitome of prevailing opinion Some of the subjects treated are as follows cell growth and degeneration, repair of the calcified matrix, circulatory disturbances, inflammation, chemotherapy and bacterial defence, surgical pathology of bone, pathology of dentine and dental pulp, of the cementum, of the pulpless tooth, of the mucosa, of the parodontal tissues, and of the enamel, foci of infection, neoplasia, mesenchyme tissue tumors epithelial tumors and tumors arising from specialized tissue, and tumors of developmental origin

The author presents his material in a lucid style The format and type are good, as are the photomicrographs and other illustrations The author writes on the basis of a broad experience in dental practice and general information There is little bibliography It is difficult to determine the position of this textbook among others in medical sciences, because the title could imply a specialized treatment of the diseases of the mouth region when actually the author states that the purpose of his book is to give the student and practitioner the minimum pathology essential to intelligent practice The title accordingly can be disadvantageous, because students and practitioners of dentistry will not realize that the book has much valuable information for them and surgical pathologists will be disappointed in finding that this is not a book on special pathology of the mouth

Good Health for You and Your Family E. Patricia Hagman Ed D., Editor Associate Professor of Health and Physical Education, Teachers College Columbia University New York Prepared from publications of Health and Welfare Division Metropolitan Life Insurance Company Cloth $3 75 Pp 305 with illustrations A S Barnes & Company 101 5th Ave New York 3 1951

As would be expected, because this volume presents material assembled from health and welfare publications of the Metropolitan Life Insurance Co , sensible recommendations and reliable information are provided The editor has set up the data in four sections, with some slight overlapping The first section contains hints for good health, with chief emphasis upon food and nutrition, and has numerous helpful charts and other illustrations on this subject

In the second section, dealing with common diseases and disorders, 32 conditions are given detailed attention ranging from appendicitis to whooping cough Discussions of many of these were prepared with the assistance of interested national voluntary or governmental agencies The third section, on child care, includes information for expectant mothers, tabulations on common childhood diseases, an immunization timetable, measurement of physical growth, consideration of behavior problems and discussion of child safety The final section, on safety and first aid, is especially well done and complete There are detailed recommendations regarding accident prevention both in the home and elsewhere, and well illustrated directions regarding first aid procedures Physicians can recommend this book to their patients without reservation

Handbook of Psychology By John H Ewen F R.C.P E , D P M Cloth. 25s Pp 215 Sylviro Publications Ltd 19 Welbeck St London W 1 1950

This handbook is intended for students who are taking up the study of psychology for the first time The author has attempted to describe the essential principles involved in psychology and the practical implications of these principles in practice The relationships of so-called normal psychology to psychologic medicine are described Short chapters on methods of treatment in psychoanalysis and other psychiatric and physical treatments of mental disorder are included

Emotional Factors in Cardiovascular Disease By Edward Weiss M D Professor of Clinical Medicine Temple University School of Medicine Philadelphia Penn Publication number 97 American Lecture Series monograph in American Lectures in Circulation edited by Irvine H Page M.D and A. C Corcoran M D Cloth $2 25 Pp 84 Charles C Thomas Publisher 301 327 E Lawrence Ave Springfield Ill Blackwell Scientific Publications Ltd 49 Broad St. Oxford England Ryerson Press 299 Queen St W Toronto 2B 1951

This is a well written book in nontechnical, popular style No phase of the subject is gone into deeply, because this book is written for the practicing physician and not for the psychiatrist A few sentences in the introduction are worth quoting The traditional old family doctor very often was an excellent psychosomatic physician, although he never thought of himself as such His patients usually were intimate friends, and he was as familiar with their emotional life as with their physical peculiarities He was well aware that the two frequently were closely related The present-day complexities of medical practice have taken the physician away from this intimate contact with his patient However, the emotional factors are still present and need evaluation in respect to diagnosis and treatment That is precisely what the author has done in this book

The problems of cardiac neurosis functional heart disease, neurocirculatory asthenia, hypertension, the cardiac with superimposed anxiety, and psychosis in cardiac disease are discussed clearly and concisely and are illustrated by well-chosen case reports This book is an excellent companion volume for the others that have appeared in the series of American Lectures in Circulation

Micro-Analysis in Medical Biochemistry By E J King M A Ph D D Sc Professor of Chemical Pathology in University of London (Post graduate Medical School) London Second edition Cloth $3 50 Pp 222 with 22 illustrations Grune & Stratton Inc. 381 Fourth Ave New York 16 1951

This textbook of clinical chemistry contains clear concise directions for determining the functioning of various organs and for analyzing small amounts of body fluids, feces and urine calculi, and gastric and duodenal contents Besides giving instructions for specific tests, the author discusses normal values for the methods included in the text, spectroscopic procedures hydrogen ion concentration, preparation of volumetric solutions, and the use of colorimetric and photometric instruments Only brief statements are made on the significance of the tests The organization of the material, the index, and the make up are good, but it is a little surprising to find directions for determining pH only by means of indicators

Evolution Emerging: A Survey of Changing Patterns from Primeval Life to Man By William King Gregory Collaborative work of American Museum of Natural History and Columbia University Volume I Text. Volume II Illustrations Cloth $20 per set Pp 736 1013 The Macmillan Company 60 Fifth Ave New York 11 1951

This encyclopedic work presents a broad survey of the animal kingdom, with emphasis on the extensive series of evolutionary transformations that have led from ameba to man The first volume contains 559 two-column pages of text and 144 pages of bibliography The second volume contains 1,013 pages of illustrations, most of which are clearly labeled line cuts In many instances the drawings represent series of animals or of structures arranged along comparative systematic lines to indicate the range and evolution of form in a given group The book presents a stimulating review of the evolutionary concept in an easy informal style

The Chemistry and Technology of Food and Food Products. Prepared by group of specialists under editorship of Morris B Jacobs Ph.D Adjunct Professor of Chemical Engineering Polytechnic Institute of Brooklyn Brooklyn In 3 volumes. Volume I Second edition Cloth $12 Pp 832 with illustrations Interscience Publishers Inc. 250 Fifth Ave New York 1 Interscience Publishers Ltd 2a Southampton Row London W C 1 1951

The first edition of this comprehensive work consisted of two volumes, but, because of the great progress made in food technology and chemistry since its appearance in 1944, the current edition has had to be expanded to three volumes These present a complete description of the technical aspects of foods, their sources, composition processing and the related body physiology Because of the great difficulty any one person would have in surveying adequately the entire field of food chemistry and food technology, 39 authors, each a specialist in his field have contributed to this authoritative work Among them are food technologists, chemists chemical engineers, biochemists, bacteriologists, sanitary engineers, public health officers, food inspectors, and entomologists Several contributors to the first edition were not able to revise their chapters on time and the editor, who is well versed in the broad subject of food control has done an excellent job of revising the chapters concerned

The first part of Volume 1 deals with fundamental food chemistry and contains an extensive discussion of the known nutrients and their chemistry and function in the body It is noted that no mention is made of the use of iodized salt as a dietary source of iodine *Also the statement is made that vitamin D_3 is about 1 5 times more efficient in man than vitamin D_2* The Council on Foods and Nutrition of the American Medical Association does not recognize any difference between vitamins D_2 and D_3 *in man The use of the term "vitagens ' referring to a group of* so-called essential food fractions is not in general usage and may be new to many readers

Part 2 discusses unit operations and processes that apply to most foods, such as evaporation extraction, mixing, and dehydration Part 3 is concerned with the maintenance of sanitary and quality control Stress is given to the proper use of pesticides in preventing contamination of foods In spite of the fact that this edition is advertised as completely revised the Council on Foods and Nutrition is still incorrectly referred to on page 612 as the Committee on Foods, a name that went out of use in 1936

Throughout the entire volume there are frequent references to the literature, and a bibliography is included at the end of each chapter This volume is a combination textbook on food chemistry and source of general information on food processing It is aimed at the food technologist, but the physician and graduate student interested in foods will find it a profitable addition to his reference library

Hospital Staff and Office Manual By T M Larkowski M D F A.C S Professor of Clinical Surgery Stritch School of Medicine Loyola University Chicago and A R. Rosanova R.Ph. M D Clinical Instructor University of Illinois Medical School Chicago Cloth Pp 428 with illustrations Romaine Pierson Publishers Inc 676 Northern Blvd Great Neck New York 1951

If one has ever had the experience of being a naive substitute intern tossed into the maw of a busy medical ward and confronted with terrifying orders to perform hypodermoclyses, spinal taps and bewildering laboratory procedures, he will regret that this valuable little manual was previously unavailable

Tersely restricted to essentials and amply illustrated, it scans routine hospital techniques, laboratory procedures, electrocardiography, and radiography It also outlines the specialized examination of the various anatomic systems It can be recommended as an excellent handbook for the senior medical student, intern, and practitioner as a reminder of the essentials of medical practice

Primer on Alcoholism How People Drink How to Recognize Alcoholics and What to Do about Them By Marty Mann Cloth $2 Pp 216 Rinehart & Co Inc 232 Madison Ave New York 16 1950

The author executive director of the National Committee on Alcoholism, describes causes of alcoholism from a practical, experienced lay viewpoint He defines the alcoholic drinker as opposed to the social" or heavy drinker and discusses steps to be taken by the family and friends of the alcoholic in their attempts to bring him to effective treatment Comment is made on methods of treatment through psychiatry, various types of medication, aversion treatment and effectiveness of Alcoholics Anonymous

The book is for the laity and is stated to be primarily directed toward the estimated 20 million or more persons who may be in some way related to or involved with, an alcoholic. The stated object is to provide these persons with the up to-date basic knowledge and practical information that is available for the proper handling of this disease The material is well presented, and the chapters concerning psychiatric treatment and the methods of the Alcoholics Anonymous group are of value

QUERIES AND MINOR NOTES

ENTERITIS IN TOURISTS

To the Editor —*Many American tourists in Mexico have enteritis (usually mild) soon after arrival As a rule the general well-being and the appetite are not disturbed, however, some patients have a great number of stools without tenesmus daily What is the cause of this disease, and what is the best way of treating it?*

M D , Wisconsin

This inquiry was referred to two authorities, whose respective replies follow —Ed

Answer —Many factors may be involved in the enteritis occurring among tourists from the United States in Mexico Ordinarily the cause is associated with staphylococcic or streptococcic contamination of food, with resulting production of chemical toxins which are highly irritating to the the intestinal mucosa The extent of the reaction seems to depend on the physical condition of the person involved, being more serious in fatigued individuals If the diarrhea continues, bacillary infection or amebiasis may be suspected The diagnosis in these instances can be established only by repeated stool examination Salmonella infection may also occur

Symptomatic treatment with milk of bismuth and paregoric is usually satisfactory Tea should be drunk frequently during recovery in order to restore fluid loss and reduce local irritation If amebiasis occurs, specific therapy with carbarsone or iodochlorhydroxyquin is usually effective In bacillary involvement, an intestinal antiseptic such as phthalylsulfathiazole or neomycin is indicated

Enteritis may be avoided by restriction of fluids to bottled beverages and by avoidance of fresh vegetables or fruits Salad dressings, ice creams, pastries, and other foods that may be contaminated in handling should be avoided Except at first-class hotels, tourists would be wise to eat only freshly and well cooked foods

Answer —The condition described is extremely common, it is sometimes called "tourist s disease" or "Aztec disease " Actually there are probably several types of acute gastroenteritis that commonly afflict tourists and even natives in Mexico Some of them are almost undoubtedly due to Staphylococcus or Staphylococcus toxins, others are probably caused by Salmonella or other members of the paratyphoid group It is important that the mild and temporary gastroenteritis not be confused with more serious infections which are also common in Mexico Good results are often obtained with streptomycin (1 gm in 20 cc of salt solution, taken 10 or 15 drops at a time every hour) Sulfadiazine and either paregoric or some other opium derivative with bismuth have been found effective If the condition does not clear up in 48 hours with one of the appropriate treatments, it is wise to be examined for other conditions, particularly amebic dysentery or one of the paratyphoids Actually the severity of the gastroenteritis varies widely, presumably because of differences in the number of germs or amount of toxin ingested and, possibly, individual resistance

ALLERGIC BLOOD DONORS

To the Editor —*Should a person who is allergic donate blood for transfusion? Will the recipient become allergic?*

M D , New York

Answer —It is difficult to give a precise answer to this inquiry without more information on the nature of the allergy present Severe or active allergic manifestations should certainly disqualify a donor but apart from this a donor may be accepted The allergic reaction occurs in less than 1% of blood transfusion recipients and appears usually as transient, small urticarial lesions but occasionally as so-called giant edema and rarely as respiratory difficulty attributed to edema of the larynx or asthmatic reaction Injections of epinephrine usually afford prompt relief In most instances, questioning of both donor and recipient reveals no history of allergic episodes apart from the transient reaction itself Systematic efforts to exclude allergic donors have certainly not eliminated this type of reaction In a few scattered cases, correlation has been observed with specific sensitization of the donor and the recipient has appeared sensitized for up to three months, although it does not appear that such passive sensitization has been associated with any great harm to the recipient

CHRONIC LEG ULCER

To the Editor —*A man aged 62 has an ulcer 2½ in (6 cm) in diameter just above the external malleolus of the right leg He does not remember injuring the leg It began as a small ulcer and gradually increased in size He was treated with medicated (contura®) bandages for three months with little improvement His veins are not large and except for the area immediately surrounding the ulcer the skin is in good condition There is no discoloration or edema General physical examination discloses no abnormalities His blood pressure is normal the Kahn reaction of the blood is negative, and results of urinalysis were negative for albumin sugar casts pus and blood What treatment would you advise? Would ligation and injection of the saphenous vein help the ulcer on the lateral surface of the leg?*

M.D , West Virginia

Answer —Chronic leg ulcer above the lateral malleolus in a 62 year old man in the absence of visible or palpable varicosities or edema may be due to arterial or arteriolar sclerosis (even with a normal blood pressure) or to a broken down granuloma (syphilis, tuberculosis or other granulomatous infection) but most frequently to a low grade skin infection, initially neglected and not bandaged Complete bed rest in a hospital should be prescribed, with attempts to culture the organism If no specific cause can be found a wide excision of the ulcer, followed by a split thickness skin graft is in order, provided arterial circulation is satisfactory Division of the saphenous vein is not indicated unless valvular incompetence is demonstrated It would have to be the short saphenous vein, judging from the location of the ulcer

FIBROUS DYSPLASIA

To the Editor —*A boy 4½ years of age has polyostotic fibrous dysplasia The involvement is extensive with lesions present in the long bones of the upper extremity, pelvis, and lower extremity—all on the left side The case is further complicated by a pathological fracture through the neck of the left femur, which is healing under immobilization in plaster May I ask your opinion as to a therapeutic trial of either cortisone or ACTH? Has either of these been used in fibrous dysplasia?*

Richard J Rushmore, M D Florham Park, N J

Answer —The use of the cortisone or pituitary adrenocorticotropic hormone (ACTH) has not been tried in the treatment of fibrous dysplasia (polyostotic fibrous dysplasia) Since the disease is typically unilateral or confined to local areas, it seems that the developmental difficulty is a local disease or dysfunction rather than a hormonal one, as in osteitis fibrosa cystica (von Recklinghausen s disease) Therefore, from a theoretical view, there seems little to recommend the use of either cortisone or pituitary adrenocorticotropic hormone in the treatment of this condition As in this case, when fractures occur, the lesion usually heals In regions where a large amount of bone has been replaced by fibrous tissue, the fibrous tissue may need to be curretted out and chips of cancellous bone used to produce strong bone At present, other treatment has little to offer

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply Anonymous communications and queries on postal cards cannot be answered Every letter must contain the writer's name and address, but these will be omitted on request.

ACNE PRODUCED BY IODIDES

To the Editor —*A man suffering from bronchial asthma for five years has evening and night attacks every day The only medicine which helps is saturated solution of potassium iodide However, after three days of this treatment, acne with boils develops on the face The use of hydriodic acid has the same complication Can anything be done to prevent acne? Would it be worth while to try thyroid extract or a drug to suppress thyroid like thiouracil? Is banthine® helpful in asthma? Is there any relation between serum cholinesterase and asthma?*

E E Sheldon, M D New York

Answer —There is no certain method of preventing the acne produced by iodides The eruption will not be prevented by the use of enteric coating, organic iodine or any other method that will affect the absorption of the iodine radical In many cases, if the iodides are continued, the eruption ultimately disappears The addition of potassium arsenite (Fowler s) solution has been thought to modify this tendency The beneficial effect of iodine is due to its direct effect on the mucous glands of the bronchi It is obvious, therefore, that neither thyroid extract nor thiouracil would act in a similar manner Asthmatic patients who cannot tolerate iodides will frequently obtain benefit from expectorant doses of ipecac or ammonium chloride

Banthine® (beta-diethylaminoethyl xanthene 9-carboxylate-methabromide) has an action very much like atropine and is not likely to produce much benefit in asthma Cholinesterase serum levels have not been shown to be affected in asthma There is no certain method of increasing the cholinesterase blood level Epinephrine is, of course the most reliable sympathomimetic in asthma Methoxyphenamine (orthoxine®) hydrochloride is another drug that has been recently demonstrated to be useful in asthma

ASTHMA, THE SALIVARY GLANDS AND POTASSIUM IODIDE

To the Editor —*A patient with asthma has been getting fairly good relief with ephedrine On several occasions I have prescribed potassium iodide Each time after about 36 hours and only after a dosage of 0 3 cc three times a day had been reached his parotid and submaxillary glands would swell and become tender His appearance would be that of a person with mumps On withdrawal of the medication this swelling would recede Also on each occasion, his asthma which is of the chronic type would be benefited Could you enlighten me as to the reason for this peculiar reaction? M D Pennsylvania*

Answer —One of the normal actions of iodide is to stimulate mucus and serous glands It is due to this hypersecretion of a thin fluid by the mucus glands of the bronchi that benefit in asthma is obtained This same action results in overactivity of the salivary glands With excessive doses of iodides a large percentage of persons will experience many undesirable symptoms, including swelling of the salivary glands With the usual therapeutic doses employed in asthma, about 2 gm a day, about one in 50 will react with salivary gland swelling This is not in the nature of an allergic phenomenon but rather an exaggerated response of the normal physiological effect of the drug

THE WHIPPLE PRINCIPLE

To the Editor —*It is my understanding that the Whipple principle" is valuable in the treatment of secondary anemia Has it ever been utilized?*

Frank C Beall M D, Fort Worth Texas

Answer —Whipple and Walden (*Am J M Sc* 179 628 [May] 1930) described a liver fraction potent in anemia due to hemorrhage in dogs This extract, sometimes referred to as the "Whipple principle,' is the portion insoluble in 70% alcohol dried and designated the secondary anemia fraction Although the value of this fraction in secondary anemia of man has not been adequately demonstrated, it has been available commercially through Eli Lilly & Company and is probably the liver component of at least some of the liver and iron products now available

TOXIC GASES FROM GLASS MELTING

To the Editor —*In the process of glass melting one charge consists of cullet (broken glass) sodium carbonate sodium sulfate, manganese and calcium fluoride—this entire mixture coming in contact with the side wall material of silica Despite the ventilation system, gases are present in the surrounding area The men working near the glass melting process are, of late complaining of mild conjunctivitis lacrimation burning sensation of nasal mucous membrane cough, dermatitis and nausea It is thought that the combustion product silicon fluoride is the causative agent Is silicon fluoride the sole irritant? What concentration of silicon fluoride in the air would be needed to cause irritation? What other combustion products would be irritating? How serious or dangerous is silicon fluoride?* *Clarence T Risley, M D Conneaut, O*

Answer —This query implies but does not state that only one of several possible charges is associated with the disturbances described On that assumption the two likely variables are the manganese and the calcium fluoride However, the manipulation of any and all batches could be associated with irritants The gas fuel could lead to irritant sulfur compounds aldehydes and acrolein Both infrared and ultraviolet rays are emitted by the molten metal (glass) Prior to the molten state, dusts from the fines of the charge arising in the process of introduction into the pots provide irritants Sodium carbonate dust is a prospective offender The manganese dioxide will not produce the manifestations described but is occasionally the source of a severe central nervous system disease This is more likely to arise in the batch or mix house If the difficulty truly springs from the molten metal, the cause probably is sodium fluoride The calcium fluoride may be altered to the sodium salt, the sodium being furnished by the sodium carbonate This fluoride is more volatile than other common ones The action of this fluoride is likely to be limited to just the abnormalities mentioned In industry neither acute nor chronic systemic fluoride poisoning is frequent Surface irritation is frequent The maximum allowable concentration is 2 5 mg per cubic meter of air Obviously this is not a stringent standard allowance On an over-all appraisal it may be stated that no single precise substance is responsible and instead that multiple influences contribute, including rays gas combustion products heat, and dust

CASTS ON A LIMB

To the Editor —*What are the indications for the use of the Wilkie boot? Are casts ever kept on a limb too long? What are the indications for taking them off?*

M D, New York

Answer —The Wilkie boot has been largely given up in this country but is still useful in patients who are poor operative risks, especially with serious heart lesions

Absorption varies with the type of fracture or infection and whether an accurate apposition of the hip has been made

A cast can be kept on a limb too long, but indications for taking off a cast depend on the condition for which it is applied In rheumatoid arthritis, the cast must be removed every day for a period of time In fractures, it should be left on until the fracture is firm

YAWNING DURING SLEEP

To the Editor —*What is the significance of frequent yawning during deep sleep in a child of 7 who is normal in every way?*

R R Snook M D McLouth, Kan

Answer —Frequent yawning during sleep probably has no great significance It may indicate a mild sleep disturbance, causing lighter sleep than normal, which may be the result of too much excitement just before bedtime (as from watching television), an evening meal that was too heavy or some daytime behavior difficulties carried over into sleep In the absence of any other symptom or physical or emotion observations, it is impossible to know the cause It might be called a sleep tic various ones of which have been described

SERUM SICKNESS

To the Editor —*A man injured his finger and after a test for serum sensitivity received a prophylactic injection of tetanus antitoxin He had received an injection of tetanus antitoxin five years previously Two weeks after the injection generalized muscular and joint pain developed Two weeks later he was found to have acute nephritis He had 5% eosinophils, but no local or general skin manifestation His blood pressure was normal at that time The result of the heterophil antibody test was positive Five months later his blood pressure was 190/105 his heart was enlarged to the anterior axillary line, and he had pitting edema of the ankles Urinalysis revealed a specific gravity of 1 010, 2 + albumin, 4 to 6 white cells, innumerable red blood cells, and granular casts He had retinal hemorrhages Blood urea on two occasions was recorded as 46 and 32 mg per 100 cc Serum chlorides were 106 serum calcium was 4 8 and serum phosphorus 2 1 mg The serum albumin globulin ratio was 3 1 to 2 3 gm Phenolsulfonphthalein excretion was 27% in two hours A muscle biopsy was negative for changes indicative of periarteritis nodosa Are the above findings compatible with a diagnosis of (1) serum sickness with resulting periarteritis nodosa and nephritis or (2) acute inflammatory rheumatism with cardiovascular renal disease caused by antitoxin?* M D Virginia

Answer —The history of previous administration of tetanus antitoxin and the description of symptoms which followed by two weeks the injection of tetanus antitoxin after the finger injury strongly suggest serum sickness The fact that a muscle biopsy was negative does not exclude periarteritis nodosa The first diagnosis proposed seems to be the correct one

EFFECTS OF SMOKING

To the Editor —*Please tell me if any work has been done on the effect of smoking on (1) acidity of the stomach (2) basal metabolic rate and (3) sugar content of the blood*

H W Nottley, M D , White Plains, N Y

Answer —Gastric hyperacidity has been reported following smoking both as an effect of the nicotine on the nerve centers and as a local reaction to the irritating swallowed constituents of the smoke Basal metabolic rate changes resulting from smoking have not been described A rise in the blood sugar content of the blood following smoking has been repeatedly observed and has been ascribed to stimulation of epinephrine secretion by nicotine Conflicting results have been reported as a result of the use of insufficient dosage or controls Further information may be obtained in Schrumpf Pierron (Tobacco and Physical Efficiency Digest of Clinical Data, New York, Paul B Hoeber, 1927), Gray (Tobacco Smoking and Gastric Symptoms, *Ann Int Med* 3 267 [Sept] 1929), and Haggard and Greenberg (Effects of Cigaret Smoking upon Blood Sugar, *Science* 79 165 [Feb 16] 1934)

MENSTRUATION AT THE MENOPAUSAL AGE

To the Editor —*What is the proper management of a woman in the menopausal age who is essentially normal on physical examination but who complains of frequent or heavy menstrual periods?* M D California

Answer —Generally, surgical treatment is neither required nor satisfactory for frequent or heavy menstrual periods near the menopause In most women the bleeding ceases completely without the necessity for surgical therapy Of course, if there is any bleeding between the periods, cancer must be ruled out by curettage and cervical biopsy

If the menstrual periods are so profuse that the patient must go to bed, curettage should be performed in the hope that it will stop the profuse bleeding until the menopause occurs If curettage is unsuccessful, one has a choice of irradiation or hysterectomy, preferably through the vagina Opinion is divided on this subject. Several gynecologists have abandoned irradiation for benign uterine bleeding at the menopause, because in some cases cancer of the endometrium appears several years later

SLEEPING PILLS

To the Editor —*I see an increasing number of patients who tell me that they have been taking sedatives at bedtime for years some as long as 15 years the usual sedative is pentobarbital (nembutal®) sodium What harm could come from such long usage? What is your opinion of the use of sedatives in the coronary patient? None of these persons seems to be a true addict but they feel that the use of a sleeping pill is better than fighting sleep* M D Illinois

This inquiry was referred to two authorities, whose respective replies follow —Ed

Answer —It is only occasionally that the use at bedtime of a sedative such as pentobarbital (nembutal®) sodium leads to an untoward result Long use of a small dose is not harmful For pathological changes to be produced in the central nervous system, it is necessary to give very large doses of a barbiturate over a period as long as a week Occasionally a patient who is not stable emotionally will take an overdose of a barbiturate with suicidal intent, but it is unlikely that a physician would prescribe barbiturates for such a person for very long Small doses of barbiturate for persons who have coronary disease are justified by the rest that the patient obtains thereby A few persons have an idiosyncrasy to barbiturates that prevents them from obtaining any real benefit from them, that is, such persons may become excited rather than quieted by the drug

Answer —As long as modern civilization makes life strenuous, many persons will need help in getting sleep Some experts say they have seen patients who appeared to be typically habituated to sleeping pills, however according to one observer, in 45 years of busy practice, he has seen no harm from the long continued use of sleep-makers During these years he has seen only a few persons who were taking excessive amounts of these drugs, and they were all psychopaths when they began taking the drugs They were able to stop the use of the drugs without difficulty Nervous persons should take sleeping pills only at night when they need them

MULTIPLE MOLES

To the Editor —*A white woman, married, 25, has small pigmented moles scattered on her body In the past two years, two small nevi have been removed because of recent appearance and increase in size—one from the palm of the hand 1 mm in diameter, and one from the shoulder 3 mm in diameter She now has a pigmented mole about 3 mm in diameter, on the skin of the antecubital fossa this has doubled in size in about one month The pathological report on two excised lesions was junction nevus no malignant change 1 Should each pigmented mole that increases in size be removed? 2 What is the prognosis? 3 Will pregnancy have an unfavorable effect?* M D Virginia

Answer —The junction type nevus is one that is prone to become malignant Not all such nevi do become malignant, so that opinion is divided as to whether they should be excised routinely When they show signs of activity, however, such as change in size, shape, or color, or if they are situated in areas that are subjected to repeated irritation, the better course is to excise them It is impossible to predict whether pregnancy will have an unfavorable effect on the lesions It should be remembered that nearly all persons have at least one mole somewhere on the body, so that the incidence of malignant change in them must be very low

TERRAMYCIN

To the Editor —*Are there any contraindications for the intraperitoneal administration of terramycin solutions?*

W J Denman M D , Warm Springs, Ore

Answer —A search of current literature does not reveal the indications or the contraindications for the administration of terramycin solutions by the intraperitoneal route

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THE GENERAL PRACTITIONER AND THE HOSPITAL

CHAIRMAN'S ADDRESS

Lester D Bibler, M D , Indianapolis

Before delving into the present problem of the general practitioner and hospital staff privileges, I should like to say something about the history of the problem, to show why the general practitioner is so much more concerned today than he was many years ago about his relationship to the hospital

Back in the horse-and-buggy days the family doctor was regarded as the important man of medicine He was friend and advisor, as well as doctor, to his patients, and the home was his area of practice The specialist was an awe-inspiring gentleman in a Prince Albert coat, who was seen but rarely, and when he was called into the home for consultation it meant that "mother was really in a bad way "

That picture slowly changed, and gradually the public came to regard the specialist as the guaranteed competent man in his field, while the general practitioner was a fellow who gave insurance "physicals" and dispensed prescriptions for simple aches and pains, a man to be by-passed if one could diagnose for himself just what specialized part of his body was ailing and refer himself to the proper specialist

In short, the general practitioner was out of style This attitude towards general practice was not only shown by the layman but was reflected in such places as military service, where the young man with a specialty diploma went into military medical service with a far better chance of promotion than the older clinician who had no board certificate

The effect on the young man of medicine of the various attitudes was such that he often felt he owed it to himself to specialize Otherwise, he might be accused of wasting his talents, of stunting his medical education, of having no ambition

Today a different attitude is apparent In the past few years there has been a reaction against over-specialization, not only among the physicians but also among laymen Part of this has been owing to the increasing difficulty of rural and small urban communities to obtain adequate medical care, and the realization that these communities needed men who could practice the wide range of medicine, surgery, and obstetrics In short, there was a need for the general practitioner, especially the young general practitioner Hence there has been a demand that medical schools turn out more "country doctors" and family physicians

The realization of the need for more doctors equipped to manage a general practice has been accompanied with a growing rediscovery of the unique values of the general practitioner One of the reasons for this new appreciation is the growth of interest, on the part of laymen as well as doctors, in the "new" subject of psychosomatic medicine Older persons, studying the kernel principle of psychosomatic medicine—"treat the whole patient, the mind and the body together"—realized that that was just what the old family doctor used to do all along

More and more persons today express the need for a physician whose training qualifies him to treat the whole patient, as well as serve as the family doctor There is a growing demand for the general practitioner, the man who knows his families, knows their history, knows their resources and what they can afford, and knows his medicine and is able, when necessary, to call in the right specialist for consultation

It has been agreed then that there should be more personal medicine and that the family physician should act more like the reliable old horse-and-buggy doctor But people are just beginning to realize that the general practitioner can no longer dispense healing from his buggy Times have changed Doctor and patient see more and more of each other in the hospital and less at the home bedside

A few statistics will show what has happened In the last 20 years, births in hospitals have increased from approximately 600,000 to over 2,800,000, an increase of more than 450% And hospital admissions, of all classes of patients, have just about tripled in the same period of time

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Read before the Section on General Practice at the One Hundredth Annual Session of the American Medical Association, Atlantic City June 13 1951

There are, of course, many factors which have made the hospital more and more important as a place of treatment One of these is the growth of hospital insurance plans which make hospitalization accessible to a greater number of people Another is the development of new and more potent methods of therapy which can be used properly only in the hospital's environment of continuous watchfulness and high-quality care

What does this mean? It means that the general practitioner of today, if he is to serve his patients as the old family doctor did, must have access to the hospital as an area of therapy where he can apply his modern knowledge to the treatment of his patients

It has been said that, "A doctor in private practice without access to a hospital is like a carpenter without tools" This pretty much describes the plight of many general practitioners who have no hospital staff appointments

Many general practitioners have discovered that they are treated very much like the new father who peers through the protective glass window of the hospital nursery—on the outside looking in They have found that many hospitals regard them pretty much like an expectant father, whose function is completed before the patient enters the hospital

Probably the three biggest problems the general practitioner has today are the obtaining of a hospital staff appointment, the admission of his patients to the hospital when he has a staff appointment, and the opportunity to perform such procedures in the hospital as he is qualified by training and experience to do

A great deal has been written and spoken on why the general practitioner finds it difficult to gain acceptance in the hospital The most frequent answer is that the hospital has become "board-minded" But why have hospitals become "board-minded"?

From what I have read and heard and experienced, there seem to be two prominent reasons, both owing to the hospital's desire to make itself the best institution possible

One reason is that many hospitals wish to make available to the public the most skilled services possible, and it is easy to decide that no staff could give better medical service than a staff of specialists So, many a well-intentioned hospital has limited its active staff to specialists, not realizing that it has done a disservice to the community by not allowing the general practitioner to practice all his skills

The other reason is the desire of hospitals to make themselves acceptable for residency training in order to encourage interns to continue service To be acceptable for a residency in a particular department, a hospital has had to have a diplomate of the appropriate specialty board serve as head of the department. So, ambitious hospitals find themselves with a board member heading every department. The general practitioner's trouble comes when the department head, in determining the rules of his department, has to decide who may practice in his department.

The department head has two choices He can set up a committee to study the qualifications of individual doctors to perform specific procedures in any department This means many headaches and much work Or, he can take the simpler way out and say that doctors can practice in his department if their qualifications are already attested by board certification or by membership in some specialty society This means far fewer headaches and much less administrative work

Adopting the simpler method of course means that, without any malice toward them, the general practitioners will be left out in the cold, the unfortunate victims of good intention

In the past five or six years there has been persistent study of the status of the general practitioner and of his role on the hospital staff From that sifting and winnowing, conducted not only by general practitioners, but also by hospital officials, the specialty advisory boards, the American Medical Association, and others, three principles have crystallized These are as follows

1 Any physician who is qualified to practice medicine and who is licensed and reputable deserves a hospital staff appointment

2 A doctor should be allowed to perform in the hospital any procedures he is qualified to perform as determined by his professional colleagues of the hospital, rather than on the basis of certification or special society membership

3 The hospitals have a responsibility to make available facilities and opportunities for graduate self-training within the hospitals, so that modern standards may be advanced by general practitioners as well as by specialists

These principles are to be found again and again in the articles and talks devoted to the subject of the general practitioner and the hospital What is being done to apply these principles to practice? A great deal has been done and is being done, and we hope more will continue to be done to implement these principles

To return to the first principle, that every qualified doctor should have a staff appointment, no hospital wishes to change its department standards to include the general practitioner since there seems to be danger that its residency qualifications might be impaired In this situation the answer to the problem of integrating the general clinician into the hospital staff is the general practice department or section Many hospitals have already found that such a section provides properly for appointments of general practitioners without radical change of staff organization Through it the general practitioner has a voice in staff government.

In 1946 the House of Delegates of the American Medical Association adopted a resolution encouraging hospitals to establish general practitioner services "Such a general practice section," the resolution read, "shall not *per se* prevent approval of a hospital for the training of interns and for residencies"

Concerning the second principle, that rather than impose arbitrary limitations a doctor should be permitted to perform that which he is qualified to do, I think that it is very difficult to put forth an argument to deny a man the right to perform that in which he is qualified If it means letting him do those procedures in the hospital, then he must be permitted to do them there If he is frustrated in his attempts to give his patients the best care, the doctor will either lapse into unambitious lethargy, or he may perform those procedures he knows in irregular institutions and attempt to perform others in which he is not yet skilled The hospital is the place for all but the simplest of surgical procedures It is there that the general practitioner must be allowed to perform the procedures in which he is skilled, and it is there that he should learn under skilled supervision those procedures which he wants to learn

This brings us to the third principle, that of providing the general practitioner with the opportunity to continue his postgraduate self-education in the hospital This means not only providing opportunities for present general practitioners to find the answers to their scientific questions, but also providing training for the young doctors who will become the general practitioners of tomorrow, through association under general practitioners in teaching hospitals

No hospital wishes to lower the standards of the care available to the community Therefore, it is to the hospital's advantage to offer a continuous educational program for the general practitioner, so that he is kept constantly abreast of new developments

A very interesting educational experiment is being conducted at the Rochester (N Y) General Hospital The general practitioners' training program permits doctors to be better general practitioners, also, the doctor who would like eventually to limit his practice to one field of medicine may take more and more specialty work at the hospital When he has advanced sufficiently, he may change his appointment to a specialty division

Of course, we don't want all our general practitioners to become specialists, but it is encouraging to see well-planned programs like that of the Rochester General Hospital, which enable the general practitioner to advance himself as he desires

The general practitioner's place in the hospital postgraduate education program is not just as a receiver of knowledge He is not only a voluntary student, but a promising teacher as well The general practitioner has already been integrated into the teaching staffs of some medical schools in order to bring the student the general practitioner's slant on medical practice, and the general practitioner has also been invited to participate in teaching in many hospitals The members of the general practice department who have teaching ability should be encouraged to participate in departmental meetings and in the teaching activities of the hospital staff The value of having the general practitioner on the teaching staff of a hospital which offers a general practice residency is recognized, but the general practitioner is also a valuable man on the teaching staff of any hospital He is well-fitted by his wide scope of medical activity to guide a house staff in subjects such as medicine as an art, in medical economics and medical ethics, and in community and industrial health facilities He will be able to give the intern an impression of what general practice is like, knowledge of which interns, as well as medical students, lack to a great degree Both groups work and study in an atmosphere pervaded by the promise of specialization, so that it is no wonder that in such an environment a young doctor thinks more often of going into a specialty than he does of entering general practice

If the young men who are needed to go into small-town practice are to get an inkling of what general practice is like, they must not only be shown the medical school's interest in training doctors for small-town general practice but also should be exposed to general practice and general practitioners in their internship and residency at the hospital

I am happy to say that a great deal of promising work is being done now It is gratifying to see some of the medical schools stressing general practice in their schools and setting up general practice residencies in their university hospital Other general hospitals are organizing general practice departments, setting up general practice residencies, and are exploring the field of continuing postgraduate education for general practitioners The American Academy of General Practice has shown its constructive value, as evidenced in part by its "Manual on the Establishment and Operation of General Practice Department in Hospitals " Medical societies and hospital groups have held symposia to discuss the integration of the general practitioner into the hospital staff And this Section on General Practice of the American Medical Association has served as a valuable example of the general practitioner's place in medical organization

I have not previously mentioned the problem of the hospital standardization program It is as yet unsettled But I will close with the sincere expectation that when it is decided what body shall operate the hospital standardization program, the general practitioner will be justly represented on it, and that that body will affirm the following three principles that every reputable physician should have a hospital staff appointment, that every staff physician be entitled to perform in the hospital those procedures in which he has demonstrated his proficiency, and that the hospital should provide the opportunity for every physician, general practitioner and specialist, to perfect himself in his art

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Metabolism —The modern science of metabolism may be taken to date from the experiments of Lavoisier, carried out toward the end of the eighteenth century He demonstrated that animal heat was the result of the oxidation of carbon in the body, and compared the process to the burning of a candle or any other combustible material The process in either case involved the consumption of oxygen and the formation of carbon dioxide Lavoisier and the physicist Laplace placed a guinea pig in a closed chamber and determined the quantity of carbon dioxide eliminated in a 10 hour period The same quantity of carbon dioxide was found to be produced by the animal's body as when 3 3 grams of pure carbon were burned in air The guinea pig was next placed in a closed space surrounded by ice The heat given out by the animal s body during a 10 hour period was calculated from the quantity of ice which had melted Three and three tenths grams of carbon burned in a similar ice calorimeter were found to generate an amount of heat comparable with that given off by the animal It was therefore concluded that the heat generated by the animal and the carbon dioxide eliminated by the lungs were the result of the combustion of approximately 3 3 grams of the body s carbon Thus, the parallelism between the amount of heat generated in the animal body and the quantity of carbon dioxide eliminated was demonstrated —Charles Herbert Best M D , and Norman Burke Taylor, M D , *The Physiological Basis of Medical Practice,* The Williams & Wilkins Company Baltimore, 1950, p 607

SURGICAL PROBLEMS OF DUODENAL ULCER

Frederic W. Bancroft, M.D., New York

Dr. Kellogg Speed once described fracture of the neck of the femur as the unsolved fracture. Duodenal ulcer may well be termed the unsolved ulcer. It has become more and more of a problem of surgical therapy and, even with the best of surgery, unforeseen complications may result.

There are, I believe, four definite indications for surgical intervention. They are (1) massive gastric hemorrhage, which demands an immediate operative procedure in order to save life, (2) recurrent hemorrhages of sufficient moment to have exsanguinated the patient despite adequate and prolonged medical care, (3) gastric retention, with persistent vomiting of food retained for a considerable period—manifested on physical examination by an audible splash and on roentgenologic examination by deformity in the region of the pylorus and evidence that the stomach does not empty itself and is becoming definitely dilated, (4) pain that has not been relieved by thorough medical therapy, including bed rest.

If these indications for surgical therapy are accepted, the surgeon should attempt to do the following: (1) remove the ulcer if possible, (2) excise the gastric antrum or its mucosa whenever possible, because it has been definitely shown that the antrum produces a hormone, gastrin, which activates the acid-forming cells of the cardia, (3) provide a free reflux of bile into the stomach.

Boyd has adequately shown that in the normal stomach, during the latter part of digestion, acidity is diminished by the reflux of bile and alkaline juices through the pylorus. He has demonstrated this not only by gastric washings but also by adequate radiographic studies of gastric motility. In duodenal ulcer there is a spasm of the pylorus, reflex in origin, but also possibly caused by scar-tissue infiltration of the pyloric ring. It is for this reason that there is higher acidity in duodenal ulcer than in gastric ulcer, and this higher acidity must, of itself, influence therapeutic measures. In order to allow a satisfactory alkalinization, it is advisable to have a vertical stomach with adequate bile reflux and fairly rapid emptying time. This prevents the accumulation of too much acid within the stomach itself.

It is because of the above aims that surgery in duodenal ulcer has become a much more radical procedure than it was in the past. Formerly, pyloroplasties would not allow the free reflux of bile into the stomach. They did not remove the pyloric antrum, and, while occasional cures resulted from pyloroplasties, the percentage of cures was too low. The same was true of gastroenterostomies. Gastroenterostomy does not remove the antrum, and it does not allow a sufficient stoma for the neutralization of the gastric juices during the latter part of digestion. While a subtotal gastrectomy is a major procedure for a duodenal ulcer, it becomes the operation of choice when the fact is accepted that only medical failures are subjected to surgery.

Let us discuss the first-mentioned indication for surgery, acute gastric hemorrhage. There are some patients who bleed so excessively that transfusions will not control hemorrhage and immediate gastrectomy is necessary.

There has been great improvement during the past five years in both the medical and surgical therapy for massive hemorrage from the duodenum. For instance, Dr. Harold D. Harvey at the meeting of the New York Surgical Society on Feb. 8, 1950, reported that during the period from 1930 to 1937, of 6 patients who had emergency operations for severe gastric hemorrhage, four died—a mortality of 66.7%—whereas, in 1948, 15 patients with a similar condition were operated on and only 1 died—a mortality of 6.7%. However, this diminished mortality does not mean diminished morbidity, since, of the 14 patients who survived, five had serious complications after operation, as follows: (1) duodenal stump leak—secondary hemorrhage controlled by second operation, (2) probably multiple emboli—severe paralytic ileus, (3) wound disruption with evisceration—jejunal fistula, with operation to relieve this, and mild postoperative bleeding, (4) secondary hemorrhage, probably from ulcer—massive thrombophlebitis with pulmonary infarct, (5) biliary fistula (possibly from a gallbladder that was opened at operation).

While only one of the 15 patients died, if all had not been under good hospital care and surgical observation, the mortality would probably have been much higher.

INDICATIONS FOR SURGERY

Recurrent Hemorrhages.—When a patient who comes to a surgeon for consideration of operation has, in his past history, had at least two massive hemorrhages, it is much better to recommend operation than to wait for the next hemorrhage and then have to perform an emergency procedure with greater risk. It has been shown that if surgery is necessary there is no operation that will prevent the recurring hemorrhage except subtotal gastrectomy. In other words, one has to perform an operation of considerable magnitude on a patient who has bled profusely. Unfortunately, there is no minor procedure that guarantees the patient's recovery and prevention of continued hemorrhages.

Gastric Retention.—The retention of barium sulfate in the stomach for more than six hours is definite indication for a surgical procedure. Gastric retention often occurs in the older age group. In fact, in a recent summary, it was shown that 30% of duodenal ulcer patients may be over 60 yr. of age when they have their first symptoms. When there is a definite scar-tissue ulcer, nonactive, patients in this group do well with gastroenterostomy. For the younger age group, subtotal gastrectomy is advocated.

Unrelieved Pain.—Constituting by far the largest percentage of cases referred to the surgeon are the patients who have been on adequate medical therapy, which has often included bed rest, but who still have persistent pain and subacute attacks that mean hospitalization and diminished productivity Assuming that surgical therapy is decided on in this type of case, what operative procedure should be considered and what are the dangers associated with it?

As only medical failures are now being operated on, the radical subtotal gastrectomy has become the operation of choice There are, however, certain hazards in this procedure that bear discussion The most important immediate postoperative hazard is rupture of the duodenal stump There are probably several reasons why this occurs The first and most important is back pressure from the afferent loop of the gastrojejunostomy following resection When one realizes that about 1,500 cc of bile and pancreatic juice is secreted in 24 hr , one can readily see why obstruction of the afferent loop with back pressure can cause a rupture The Hofmeister type of anastomosis, because it diminishes the size of the stoma that is present in end-to-side anastomosis, is of advantage because it allows the tacking up of the afferent loop before it enters the stoma and thereby may prevent kinking

Assuming that one cannot do a satisfactory closure of the duodenal stump because of edema or the low position of the ulcer in the second part of the duodenum and the operator fears injury to the common duct, what precautions should one take? In this type of case Lahey has advised opening the common duct and passing a tube downward through the papilla of Vater so that the operator may readily recognize the position of the duct Opening the duodenum wide, inserting a sponge and seeing how far below the transection one gets bile on the sponge, is also an aid When one finds difficulty in satisfactory closure of the duodenal stump, Whipple has advocated inserting a catheter into the end of the stump, anchoring it with a purse-string suture and possibly inserting a second purse-string suture with inversion The distal end of the catheter is then drawn out through a stab wound This creates primarily a duodenal fistula, but in the cases in which this has been done there has been no persistent fistula after withdrawal of the catheter in the later postoperative stage When the ulcer has had to be shaved off the head of the pancreas, there is always danger of pancreatic drainage, and I believe that in practically every case of subtotal gastrectomy a drain should be inserted to the duodenal stump and possibly anchored

In a recent case at the Bronx Veterans Hospital, a duodenal ulcer patient was lost because of insufficient drainage to the duodenal stump Evidently, in the closing the drain had migrated upward It was not in the region of the stump, and a large subhepatic biliary abscess caused the death of the patient.

Whipple advocates a sump type of drain to the duodenal stump This drain should be anchored by one stitch in the neighborhood of the stump so that it cannot migrate because of the closure of the wound or the postoperative vomiting and distention I believe that, in general, if the gastrojejunostomy has been carefully performed without tension and with satisfactory mucosal and serosal sutures, infection or leakage from the stoma is a relatively rare complication

In 1931, because we were perturbed by the relative frequency of duodenal stump ruptures and had learned that the Finsterer operation of pyloric exclusion had not met with favorable results, it occurred to Lewis Gregory Cole and myself that, if the mucosa of the prepyloric end of the stomach could be coned out, two purposes could be accomplished 1 The acid hormone-producing mucosa of the antrum could be excised 2 A firm, strong muscularis suture proximal to the pylorus in the antrum of the stomach could be made possible

We had tried the Finsterer pyloric exclusion operation on dogs without coning out the mucosa and had found that a blind gastric pouch filled with bile and gastric juice resulted, which was accompanied by a marked inflammatory process of the mucosa We therefore developed a procedure that we called "A modification of the Devine Operation of Pyloric Exclusion "

When I published this procedure in 1932, I reported the follow-ups on 14 cases I have done many since then I have used this procedure only when it seemed to me that the following two dangers offered more hazard to the patient than did the operation of pyloric exclusion (1) dissection to free the ulcer penetrating into the pancreas and (2) rupture of an insecure closure of the duodenal stump I agree that when the ulcer can be removed with safety subtotal gastrectomy is the operation of choice, but in 10% to 20% of cases of duodenal ulcer the danger of excision of the duodenum adds to the mortality risk of the patient

In the October, 1949, issue of the *British Journal of Surgery* Makkas and Marangos report their results with what they call the Bancroft-Plenk method of antral exclusion, which they use in difficult cases Plenk's modification was published in 1936, four years after mine, and the only variation I can find is that he does not try to invert the serosal surface of the antrum but places two purse-string sutures in the muscularis of the antrum I had described placing two purse-string sutures in the muscularis and a third one to invert the serosa in order to prevent adhesions Since the original description in my paper, I have modified my procedure in that I resect the middle third of the stomach This allows me to do as complete a subtotal gastrectomy as one does with the radical procedure and to utilize the Hofmeister modification I transect the stomach distally about 3 in (7 62 cm) proximal to the pylorus, excising the middle portion This allows sufficient space at the antrum to cone out the mucosa down to the pylorus and to close the stump adequately with two layers of purse-string muscularis and a third inverting serosal suture

Makkas and Marangos state that at the Makkas Clinic the Bancroft-Plenk operation was performed upon 243 patients with a mortality of 2 3% Plenk has reported a mortality of 2 6% in 116 cases operated upon by this method

Paraskevas and Sapkas, in 1948, reported follow-ups on the operation of exclusion without removal of the pylorus All of their patients did very well Some of them put on weight up to 25 kg and were able to return to their original jobs No suspicion of recurrent ulceration was noted in the cases followed

My own follow-ups have been similar to those described by Paraskevas and Sapkas, and I have had one patient with marginal ulcer who was taken care of at another hospital The remainder of the patients have done as well as any of those on whom I have done the radical operation, and the mortality has been less

Makkas and Marangos also state in their article that there are certain nonexcisable types of duodenal ulcer Many surgeons will concur because it is known that if such a duodenal ulcer is excised, a duodenal fistula or a biliary subphrenic abscess may result

There has been a marked variation of opinion in the last few years as to the value of retrocolic or antecolic type of anastomosis At least 10 yr ago practically every operation was done by the retrocolic method Then came a period when the antecolic method was advised because edema of the mesocolon created stricture in the stoma My own experience and the experience of many other surgeons has been that there are just as many complications from the antecolic procedure The stoma may become adherent to the abdominal wall Kinking of the afferent and efferent loop is as likely to occur in the antecolic, as in the retrocolic procedure Moreover, in most people, this method necessitates a rather wide resection of the omentum because the omentum may twine around the stoma and create an obstruction, and if it is a fatty omentum it must be resected in order that sufficient intestine may anastomose with the gastric stump without tension It is true that if a secondary procedure has to be performed the antecolic is easier to approach than the retrocolic, but I do not think that this is sufficient reason to adopt the antecolic anastomosis Physiologically, if the retrocolic stoma works satisfactorily, a short jejunal loop with less antiperistaltic reflux gives a better-functioning stoma and the patients have less distress from gas

In a gastrojejunostomy, as with any anastomosis on intestines, there should be a proximal vent to relieve gas and fluid distention A Levin tube has proved a lifesaver as a postoperative treatment following gastric resection It can, however, fail to function if not thoroughly watched To insert a Levin tube and place the patient on Wangensteen suction may prove a boomerang The openings in the Levin tube may fill with blood clots, and one may be lulled into false security in feeling that the stomach is being properly decompressed I personally prefer not to use the Wangensteen suction but, rather, to place the patient on irrigations with isotonic sodium chloride solution and suction every two to three hours postoperatively and to allow gravity drainage to take place between these procedures

Having passed the first seven or eight postoperative days after resection, there is still another hazard that one may encounter Often, after an increase of the diet on the sixth or seventh day, the patient starts vomiting, and if a Levin tube is inserted one is surprised at the amount of retention that can occur in a stomach that, in the operator's opinion, has been resected by at least three-fourths I have seen 1,000 cc recovered from a stomach that I would have felt would not hold more than 300 cc When this complication occurs, it is usually due to edema of the stoma, and the patient must be put on parenteral feeding and repeated gastric lavage This complication may persist for several days, and it tries a surgeon's soul to decide whether or not there is a definite obstruction to the efferent loop that needs operative intervention If one has the patience to wait, in many of these cases there is recovery without operative intervention

During this period of waiting, the surgeon must be certain that there is sufficient protein intake to prevent hypoproteinemia and that there is not a sodium-potassium shift Sodium is the main component of tissue fluids, whereas potassium is the main component of the individual body cell With persistent diarrhea, prolonged shock or alkalosis, potassium may escape from the cell and its position be occupied by sodium This is followed by profound weakness, cyanosis and definite electrocardiographic changes All of us have lost patients we could have saved if we had had the knowledge to give potassium intravenously when this complication occurred

In the October, 1949, issue of the *British Journal of Surgery,* Andrew Muir describes postgastrectomy syndromes, and if the results were all as poor as he indicates in this article, I believe that most of us would give up the operation He analyzes the symptoms of 124 patients who had undergone subtotal gastrectomy Prof C F Illingworth performed 92 of the operations in the Western Infirmary, Glasgow, Scotland, and the remainder were done by Mr W J M Brandon at Law Hospital, Lanarkshire Muir classified the symptoms into six groups in the following order of incidence and importance (1) the dumping syndrome, (2) failure to gain weight after operation, (3) psychoneurotic symptoms, (4) bilious regurgitation and vomiting, (5) hypoglycemic attacks, (6) deficiency syndromes

Muir states that 90 patients out of the 124 followed, or 72 6%, suffered from the dumping syndrome Fifteen of these were unable to resume work for an average period of five months following operation He theorizes on the probable causes, and he believes that rapid dumping with dilatation of the efferent loop is probably the main cause Studies of blood sugar did not show hyperglycemia followed by hypoglycemia during the dumping syndrome As this high percentage of dumping syndrome is much higher than has been my experience, and as statistics from the follow-up system at the Veterans Administration Hospital, Bronx, N Y , show an incidence of 10% with only moderate symptoms, I believe that avitaminosis and the poor postoperative diet the patients have in Scotland may have been a factor

No cure-all has been found for the dumping syndrome Small, frequent meals, fluid restriction at meals and the recumbent position after eating may have aided the relief of this important syndrome Fortunately the symptoms usually diminish after several months

The majority of the patients reported by Muir who suffered from this distressing symptom had had antecolic gastrojejunostomies with rather long afferent loops He states that three of the patients were cured by the second operation of jejunojejunostomy between the afferent and efferent loops and also states that a loop in the antecolic gastrojejunostomy creates a long proximal segment into which food readily passes, and symptoms very similar to those of the dumping syndrome are attributable to the duodenal distention so caused

Several years ago, Dragstedt, after some interesting experimental work, suggested that the ideal treatment of duodenal ulcer when there was no gastric retention was section of the vagus nerve This operation is popularly known as vagotomy Dragstedt reported a fairly large group of patients who had had resection of the anterior and posterior branches of the vagus nerves as they accompany the esophagus In his early work he did a transthoracic approach and did not perform operations on the stomach itself Later, he changed to an abdominal approach and did the section of the vagus nerves below the diaphragm and performed a concomitant gastroenterostomy This procedure was taken up by many surgical clinics with the hope that minor procedures with less risk could be performed on patients with duodenal ulcer

Shortly after Dragstedt's papers were presented, we at the Bronx Veterans Hospital thought it would be satisfactory clinical research work to operate on patients with duodenal ulcer by the transthoracic approach in order that we might properly evaluate this procedure We were certain that the two vagus nerves could be better resected from above the diaphragm One would not be tempted by this operation to do any plastic work on the stomach or duodenum The cases were brought up for discussion with the residents The indications for vagotomy were recurrent symptoms of duodenal ulcer Patients thus afflicted had not responded to medical therapy and had shown no evidence of gastric retention Also, it was considered advisable to accept only those patients who had a high night secretion of gastric juice Immediate follow-up results showed that there was complete or nearly complete relief of ulcer pain Twelve-hour overnight secretion that had averaged 970 cc preoperatively was reduced to 290 cc in the early postoperative period Maximum free hydrochloric acid values in the overnight specimen dropped from an average of 44 units to 24 units postoperatively

Sauer and Healy have published a careful follow-up analysis of 50 cases of vagotomy performed by the transthoracic method I shall not go into the details of these follow-up reports and refer you to their excellent article in the *Annals of Surgery*, December 1949 However, I should like to mention the main complications A feeling of fullness in the epigastrium, belching pyrosis, regurgitation and vomiting were noted in varying degrees of severity in 80% of the patients early in the postoperative course There were associated loss of stomach tone, gastric enlargement, diminished peristalsis diminished gastric contents, and delay in emptying time In five patients or 10% such severe and unrelenting atony developed early in the postoperative period that further surgery was necessary Gastric resection was performed on four of these five patients 3 to 15 weeks postoperatively after strenuous efforts with the use of gastric suction and bethanechol chloride (urecholine®) had failed

All of the patients operated on and studied in this follow-up analysis were readmitted to the hospital at various times so that gastric analysis and late radiological studies could be done The conclusions of the examiners were as follows

> According to our data a patient who is subjected to vagotomy has one chance in five of securing complete relief, two chances in three of being benefited to some extent, and one chance in three of failure—all within an average of 18 months postoperatively For this rather dubious benefit he must accept a small but nevertheless significant mortality risk and the unhappy prospect that his continued freedom from ulcer symptoms is by no means assured Half the time he must also pay an additional premium in the form of persistent symptoms of gastric atony which not infrequently may be more disabling than the original ulcer
>
> On the whole, we feel that vagotomy, even in carefully selected cases, has not proved successful in a sufficient number of cases to justify its routine use Despite the lower operative mortality, failures are too frequent and morbidity too serious after vagotomy to justify its replacement of other proved more effective methods of surgical treatment

CONCLUSIONS

In properly selected cases, I believe that subtotal gastrectomy is the operation of choice in duodenal ulcer

The operation is one of considerable magnitude and demands careful preoperative treatment, excellent anesthesia, meticulous operative technique, and constant and wise postoperative observation

In the nonresectable ulcer, the operation of pyloric exclusion with excision of the antral mucosa will save lives

Vagotomy, save in some cases of gastrojejunal ulcer, has not justified our early hopes

16 E. 90th St.

William Beaumont.—Beaumont published his book himself and had it printed in Plattsburgh, the first copies coming from the press in November, 1833 It is entitled "Experiments and Observations on the Gastric Juice and the Physiology of Digestion" and the heading continues 'by William Beaumont, M D , Surgeon in the U S Army, Plattsburgh Printed by F P Allen, 1833 " In the preface, the author states that his experiments 'are made in the true spirit of enquiry, suggested by the very extraordinary case which gave me the opportunity of making them I had no particular hypothesis to support, and I have therefore honestly recorded the result of each experiment exactly as it occurred I had opportunities for the examination of the interior of the stomach, and its secretions, which has never before been so fully offered to any one " The introduction narrates the story of St Martin s accident, recovery and association with Beaumont from 1822 until 1834 In addition, there are brief sections describing the method of withdrawing gastric juice, the valve which closed the fistula and the appearance of the interior of the stomach

The book attracted favorable attention both in this country and abroad The appearance of the book established Beaumont s reputation as an investigator —Arthur H Smith, William Beaumont (November 21, 1785—April 25, 1853), *Journal of Nutrition* May, 1951

VAGOTOMY VERSUS GASTRIC RESECTION

COMPARATIVE EVALUATION OF RELATIVE EFFECTIVENESS IN A CONTROLLED SERIES OF CASES

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and
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What surgical procedure should the surgeon advise for the patient with intractable peptic ulcer? Despite an unusually voluminous literature, there is still considerable disagreement on this question among surgeons and clinics throughout the country The procedures generally advocated are gastroenterostomy, subtotal gastrectomy, and vagotomy—either alone or in combination Most teaching clinics are in general agreement that gastroenterostomy alone should be reserved principally for the inactive ulcer with obstructive symptoms, in the presence of low acid values, and for occasions when the general condition of the patient makes gastric resection inadvisable

The effectiveness of radical subtotal gastrectomy in controlling the symptoms of intractable ulcer has been amply established by numerous reports with careful and prolonged follow-up studies [1] The status of this procedure as the surgical treatment of choice has in recent years been challenged by vagotomy, either alone or in combination with gastroenterostomy Emphasis has been placed upon a low mortality rate, effective control of symptoms, and avoidance of certain of the unhappy sequelae of gastric resection

A careful and comprehensive study of the present status of vagotomy has been recently published by Trimble and Lynn [2] to which the reader is referred for a complete bibliography A review of the literature indicates that much of the early enthusiasm for vagotomy has abated The accumulation of careful follow-up studies over a period of years is likely to show that the indications for vagotomy in the treatment of peptic ulcer will be considerably limited

In this discussion we shall limit ourselves to a comparative evaluation of radical gastric resection and vagotomy Furthermore, we will consider only cases in which vagotomy alone was performed to include vagotomy in combination with other surgical procedures serves only to confuse the issue We feel that this limitation is necessary and fair since the addition of other variable factors, particularly so definitive a one as gastroenterostomy, may obscure the long-term effect of nerve section alone upon the ulcer process Although much has been written regarding the effectiveness of both gastric resection and vagotomy, very few reports compare the two procedures in anything resembling a controlled series of cases [3]

In a comparison of the effectiveness of any therapeutic methods, it is most important that the treated groups be comparable insofar as possible Under ideal conditions, patients in the various groupings should have entirely like characteristics and should differ only in the specific treatment they receive while under study Such factors as age, race, sex, duration of illness, and severity of symptoms obviously may influence the final evaluation either individually or collectively The more the groups are alike in such characteristics, the more significant will be the final comparison One must avoid the pitfall of comparing the results of different groups of investigators unless the criteria for evaluation are known with certainty One reporter's "good" result may be another's "fair" rating and be considered as a "failure" by a third In order to achieve statistical validity not only must the initial selection of cases be carefully controlled but the same criteria of success or failure must be utilized to judge the final results

In a review of reports, attention should be directed not only at the duration of the follow-up but also at the percentage of total cases followed Statistically valid deductions frequently cannot be made from observations of a limited number of the treated group, since factors other than chance may play a large role in determining which patients appear for follow-up examinations In a recent report [4] of 532 consecutive cases of duodenal ulcer, satisfactory follow-up information was secured in only 72 9% of them The accuracy of the analysis of the reported cases is unquestioned, but one may well wonder if the same proportion of good and bad results prevailed in the rather substantial unknown group

Any haphazard compilation of the reports of various clinics without regard for such basic consideration can lead only to conflicting and confusing impressions Much more useful information is likely to be derived from a smaller group of observations in which proper controls

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Mrs Ethel Skutch of the Follow Up Clinic compiled much of the data presented in this paper

Since the original submission of this paper for publication the average follow-up period for both groups has been extended to four years without significant alteration of the end results observed.

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions published by the authors are a result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration

[1] (*a*) St. John F B Harvey H D Ferrer J M and Sengstaken R. W Results Following Subtotal Gastrectomy for Duodenal and Gastric Ulcer Ann Surg. **128**:3, 1948 (*b*) Hinton J W The Intractable Duodenal Ulcer Evaluation of Surgical Procedures ibid **117** 498 1943 (*c*) Allen A W and Welch C E Gastric Resection for Duodenal Ulcer Follow Up Studies ibid **115** 530 1942 Subtotal Gastrectomy for Duodenal Ulcer ibid **124** 688 1946 (*d*) Sanders R L. An Evaluation of the Methods of Surgical Treatment of Duodenal Ulcer South M J **40** 567, 1947 (*e*) Rienhoff W F Jr An Analysis of the Results of the Surgical Treatment of 260 Cases of Chronic Peptic Ulcer of the Duodenum, Ann Surg **121** 583 1945 (*f*) Wells C and Brewer A C. The Surgery of Duodenal Ulcer Brit. J Surg **35** 364 1948

[2] Trimble I R and Lynn D H Collective Review The Surgical Treatment of Duodenal Gastric and Anastomotic Ulcer with Especial Reference to Vagus Resection, Internat. Abstr Surg **90** 105 1950

[3] (*a*) Garner B O Claugus C E Griffin D W and Hamilton, J E Surgical Treatment of Peptic Ulcer Comparing Vagotomy and Gastric Resection Preliminary Report South Surgeon **16**:150 1950 (*b*) Warren, R. and Meadows E. C. Subtotal Gastrectomy or Vagotomy for Peptic Ulcerations Early Results and Post-Operative Symptoms New England J Med. **240** 367 1949

[4] Gray H K. and Williams R. R Jr Results of Classic Operations for Duodenal Ulcer 5 to 10 Year Follow Up in 532 Cases J A M A **141** 509 (Oct 22) 1949

are established and end results evaluated on a critical and impartial basis It was in the hope of approximating such a set of circumstances that the present study was undertaken

CLINICAL MATERIAL

The material for this series consisted of 263 consecutive subtotal gastrectomies and 54 consecutive vagotomies performed during the four-year period from 1945 to 1948, inclusive This represents the total number of operations of each type performed during this time at the Veterans Hospital, Bronx, New York Gastric resections were performed for the following surgical indications duodenal ulcer, elective, 166, duodenal ulcer, emergency massive bleeding, 2, marginal ulcer, 9, benign gastric lesions including ulcer, 39, cancer, 47 Vagotomy was performed 43 times for duodenal ulcer and 11 times for marginal ulcer The problems of emergency hemorrhage and cancer are not within the scope of this paper We have not performed vagotomy for gastric ulcer for fear of leaving behind a malignant lesion Accordingly, we shall only briefly touch upon the results of subtotal gastrectomy for gastric ulcer and confine the major portion of the discussion to duodenal and marginal ulcer We have, therefore, 166 consecutive cases in which patients with duodenal ulcer were treated by gastric resection and 43 cases in which patients were treated by vagotomy In this latter group we have eliminated two cases of vagotomy that were combined with other surgical procedures In the second category we have nine consecutive cases of marginal ulcer in which gastric resection was done and 11 cases of vagotomy

DUODENAL ULCER

To establish the comparability of the groups treated by gastrectomy and vagotomy, we analyzed all of the cases with regard to certain factors that might bear upon the end result The patients treated by gastric resection were divided into two subgroupings depending upon whether or not they demonstrated retention of barium sulfate in the stomach after four or more hours, as shown by preoperative roentgenograms The results are listed in Table 1 It will be noted that these two subgroups treated by gastric resection are statistically comparable with regard to age spread, average and median age, race distribution, sex, type and duration of symptoms, and the surgeons performing the operations Furthermore, either of these groups is similar in these respects to the group treated by vagotomy, except that the average patient undergoing vagotomy is seven years younger and has had ulcer symptoms for two and one-half years less than has the patient treated by gastric resection If anything, these data would seem to favor the end results in the vagotomized group although, as will be indicated later, they do not

It is well recognized that better surgical end results will be encountered in the obstructed, rather than in the unobstructed, patient Is it fair, then, to include these obstructed patients in a group that is to be compared with patients treated by vagotomy for which any degree of gastric retention is here considered a contraindication? Despite the favorable weighing of the figures for gastric resection, which would result from the inclusion of this group we have eliminated entirely the patients with any degree of obstruction, in the interests of statistical comparability We have now reached the final stage of selection with 95 patients treated by gastric resection and 41 cases by vagotomy It is believed that these two groups are as nearly comparable as is reasonably possible in the study of clinical cases

In every case in both series, the following preoperative criteria had to and did obtain (1) symptoms of intractable pain, chronic bleeding or both, (2) failure to control symptoms by adequate medical regimen, (3) evidence of active ulcer by roentgen ray, (4) no retention, clinically or by roentgen ray At least one episode of preoperative bleeding was observed in 76% of the resection group and in 71% of the vagotomy group of patients

Operative Procedures—Gastric resections were of the conventional radical type with removal of an estimated two-thirds to three-fourths of the stomach in each case Closure of the duodenal stump and gastrojejunostomy were effected in all instances with interrupted nonabsorbable surgical (silk) sutures usually associated with preliminary hemostatic or inverting layers of chromic absorbable surgical suture The ulcer area was removed in all but 12 cases in which the surgeon felt constrained to leave the lesion behind because of its extent and location In these instances closure was effected either by simple inversion of the proximal duodenum or by use of the Bancroft modification of the Devine exclusion technique with removal of the mucosa of the pyloric remnant Anastomoses were of the Hofmeister type in 85 cases and of the Pólya type in 10 cases In 23 cases the anastomosis was retrocolic and in 72 cases antecolic

TABLE 1—*Comparison of Treated Groups*—Duodenal Ulcer*

Basis of Comparison	Gastric Resection: Duodenal Ulcer With Obstruction	Gastric Resection: Duodenal Ulcer Without Obstruction	Vagotomy Duodenal Ulcer Without Obstruction
Age			
Deviant	23-60 yr	21 70 yr	21 58 yr
Average	43 yr	42 yr	35 yr
Median	44 yr	43 yr	33 yr
Race ratio of white to Negro patients	70 1	89 6	36 5
Type of symptoms	Pain and/or bleeding	Pain and/or bleeding	Pain and/or bleeding
Duration of symptoms—average	8.8 yr	8.3 yr	6 0 yr
Operation	Subtotal gastrectomy	Subtotal gastrectomy	Vagotomy

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* All patients in these groups were men and the same group of surgeons operated on each of the treated groups of patients

Vagotomy was performed in each instance through the lower left transthoracic route with or without rib resection In each case the vagus nerve trunks were isolated and transected and a segment of nerve removed for histological verification Operations were performed by the full-time and attending surgeons until April, 1946, the date of establishment of the residency training program After that date 92% of the operative procedures were performed by the resident surgeons

Early Postoperative Results—Gastric Resection Following gastric resection suction with an indwelling Levin tube was maintained for two to four days in most instances followed by hourly feedings of 1 oz (30 cc) of liquid, which was increased to 2 and 3 oz (60 and 90 cc) hourly on successive days Semisolid foods were added on about the seventh day and gradually increased to an intermediate ulcer diet at the end of two weeks

There were three postoperative deaths, a case fatality rate of 3 2% The first of the patients who died developed early efferent loop obstruction necessitating lysis of adhesions on the eighth postoperative day He died on the 24th day after resection, of toxic hepatitis, with uremia, cholemia, and bronchopneumonia Autopsy showed toxic degeneration of the liver, spleen, kidneys, and adrenals There was no remaining evidence of obstruction of the intestinal loops

The second patient to die developed signs of peritonitis and died on the ninth postoperative day Autopsy revealed a 7-mm perforation of a duodenal ulcer left behind at operation, situated 1 cm distal to the stump closure There were acute diffuse peritonitis and focal acute pancreatitis

After discharge from the hospital four weeks after resection, the third patient was readmitted nine days later with abdominal pain and a palpable mass in the left lower quadrant Exploratory laparotomy revealed a retained laparotomy pad, two perforations in the jejunum, and markedly adherent intestinal loops that were freed The patient went downhill with paralytic ileus and uremia and died 111 days after resection Autopsy revealed multiple intestinal adhesions with obstruction and diffuse peritonitis

Including the postoperative deaths, 27 complications developed in 23 cases or 24% of the group The complications included 11 instances of atelectasis or pneumonia, four wound disruptions, three wound infections, two cases each of peritonitis, stump leakage and toxic hepatitis, and one instance each of efferent loop obstruction, splenic pedicle hemorrhage, and paraplegia[5] An undetermined number of patients estimated at about 20%, developed dumping syndromes of varying degrees of severity before discharge from the hospital The majority of these were transient and cleared spontaneously either before or shortly after discharge This problem will be discussed further under "Late Complications "

Vagotomy In all except two cases there was complete or nearly complete relief of ulcer pain immediately after operation Overnight gastric secretion studies and insulin (Hollander) tests were performed not only before surgery but on one or more occasions in the early postoperative period The results of these studies have been previously published in some detail[6] To summarize briefly, there was a decrease in the 12-hr overnight secretion volume to approximately one-fourth of the preoperative values In the 41 cases, postoperative insulin tests were negative in 33, indicating a presumptively complete nerve section In two cases the test was equivocal and in two cases the test was not performed because of severe atony In four cases the result was positive with the presumption of incomplete vagotomy In these four cases the end results were considered good in three and poor in one

Postoperative complications occurred in 24 or 59% of the group Most of these were pleural effusions that were of no serious consequence The most disturbing complication was the persistent gastric atony noted in the majority of cases and that was considered severe in four In these four cases, continued gastric suction and administration of bethanechol chloride (urecholine®) were of no avail, and further surgical intervention was required from three to 15 weeks after vagotomy Gastric resection was successfully performed in three cases In the fourth, because of severe debilitation from pre-existent hepatic disease, only gastroenterostomy was performed This failed to halt the patient's downhill course, and he died three months and 20 days following vagotomy This single postoperative death resulted in a case fatality rate in this group of 2 4%

Follow-Up Studies—Methods We have previously expressed our distrust of questionnaire responses, in particular when attempting to evaluate the extent of subjective symptoms We have repeatedly observed questionnaire replies that indicated a poor result when, after *a personal interview, it was quite obvious that the result* was good The converse of this situation has also been noted, although not with as great frequency The lesson that we have well learned is that questionnaire information may be grossly misleading and is easily influenced by slight changes in the wording of the questions Personal interview in conjunction with laboratory and roentgen-ray studies, when indicated, form, in our opinion, a method of evaluation least likely to result in interpretative error

For such reasons each patient was invited to return to the follow-up clinic or to be rehospitalized for more intensive study Table 2 indicates the type of follow-up study achieved in each group It is significant that over 98% of the determinate cases were followed and the vast majority of these by personal interview or, better still, by rehospitalization Although the follow-up periods are relatively short, they are comparable for each of the groups studied St John and his co-authors[10] have indicated that with gastric resection only a small percentage of additional failures will be observed after the three-year follow-up period This would seem to indicate that the present figures may not be significantly altered in the years to come

Late Complications—Before outlining the symptomatic end results, it would appear appropriate to discuss certain of the late complications of each operative procedure It is not possible completely to divorce these complications from end results, since in substantial measure they may influence the final evaluation Without attempting to consider every pathophysiologic alteration occasioned by either operation, we shall limit ourselves to the most commonly observed clinical situations namely, the dumping syndrome, recurrent ulceration, recurrent bleeding, and persistent severe atony

Dumping Syndrome Although this syndrome has been described in other conditions, it is most characteristic of the postsurgical state wherein the stomach has been anastomosed to the small intestine We have not tabulated the transient syndromes that were observed in the early postoperative period We have listed only those patients who, at least one year postoperatively, presented a symptom complex characterized by (*a*) weakness, nausea, vertigo, and/or headache, (*b*) occurrence of symptoms 10 min to several hours after eating, and (*c*) relief secured by recumbency Nine patients, or 10 2%, of the definitive group following gastric resection were considered to present the dumping syndrome by this definition Of these nine, three were considered severe, two moderate, and four were estimated as mild None of the vagotomized patients was observed to meet the criteria established

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[5] Ciliberti B J Paraplegia Following Inhalation Anesthesia for Subtotal Gastrectomy Anesthesiology 9 439 1948

[6] Healy M J and Sauer P K Some Limitations of Vagotomy in the Treatment of Peptic Ulcer Ann Surg 130 985 1949

Ulceration Among the patients treated by gastric resection, five (5 6%) were observed to have roentgenologic and clinical evidence of a marginal gastrojejunal ulcer With a single exception, gastrointestinal roentgenograms were secured on all followed cases in which the result was other than good or excellent Virtually every patient, therefore, who presented any significant pain or bleeding had one or more gastrointestinal series in the follow-up period We have excluded from this category three patients with a history of bleeding without confirmatory evidence of ulceration after repeated roentgen-ray examinations Similarly, we have excluded two patients in whom roentgen findings of ulceration were suggestive but in whom clinical evidence did not support the diagnosis Of the five patients with marginal ulcer, one died of perforation with peritonitis six months after resection One patient was subjected to vagotomy nine months after resection, with only partial relief Three patients have persistent symptoms and have been classified as failures

TABLE 2—*Follow Up Studies on Patients with Duodenal Ulcer*

	No of Patients with Gastrectomy	No of Patients with Vagotomy
Patients not available for follow up		
Deaths postoperatively	3	1
Dead with disease (after 6 mo)	1	0
Dead without disease (after 3 mo)	1	0
Total	5	1
Patients available for follow up		
By rehospitalization	16	33
By clinic visit	66	6
By questionnaire	6	1
Lost to follow up	2	0
Total	90	40
Per cent of follow up	98	100
Period of follow up observation mo	19-71	18-50
Average follow up period mo	33 0	36 2

When, at gastric resection, the duodenal ulcer is not removed, its subsequent activity cannot be determined by roentgenograms A different situation exists in the vagotomized group Here the ulcer is left behind in all instances and is available for roentgenologic appraisal Postoperative roentgenograms were taken one to five times during the follow-up period on each patient, with the exception of three, none of whom presented any ulcer symptoms These films were taken from seven months to three years after vagotomy and all were reviewed by two roentgenologists to avoid inequities in rating Details of the roentgenologic observations in this series have been previously reported [6] but are summarized here with the more recent follow-up reports Forty-six per cent demonstrated an active ulcer as evidenced by a niche or by deformity, irritability, spasm, and tenderness In another 46% inactivity was evidenced by cap deformity above In 8% follow-up roentgenograms were not available These findings would indicate that even after a suitable postoperative waiting period persistence or recurrence of active ulceration will be found as often as healing This observation is at considerable variance with reports from other clinics, which indicate a high rate of healing following vagotomy We believe that the technical methods observed in this series, together with the greater frequency of follow-up roentgenograms, have yielded a closer approximation to the true incidence of ulcer activity

Recurrent Bleeding In a consideration of only those cases which presented a history of preoperative bleeding it can be seen that the incidence of recurrence of this symptom in the follow-up period was 13 6% for the group treated by gastric resection and 31 0% for the vagotomized group This appears to confirm our observation of the low incidence of ulceration following gastric resection and the high rate of persistent ulceration after vagotomy

Severe Atony We have considered under this complication only those patients in whom the gastric atony following denervation was so severe that it constituted the main indication for further operative intervention Five patients met these criteria Gastroenterostomy was performed in two cases and gastric resection in three—from three weeks to 11 mo after vagotomy In addition, there were eight patients with moderate atony and 16 with slight atony Effects were rated on the basis of clinical symptoms of fullness, regurgitation, and vomiting These clinical observations showed a high degree of correlation with the roentgenologic findings of barium sulfate retention It is pointed out that these observations have been noted to persist up to three years after vagotomy The detailed roentgenographic findings in these cases are reported elsewhere [7]

End Results—Final evaluation of end results was based on the presence or absence of ulcer symptoms, the secondary effects of the operations, and the patient's estimate of his condition as compared with his preoperative status The following criteria were established for the adjective ratings assigned

End Result	Description
Excellent	No ulcer symptoms or secondary effects
Good	Mild or intermittent ulcer symptoms or secondary effects, but definite improvement shown
Fair	Recurrence of ulcer symptoms or marked secondary effects, or both but condition better than preoperative state
Failure	Return of ulcer symptoms to preoperative level or worse, secondary complications necessitating further surgery, or both

Results are summarized in Table 3 Of the 12 failures in the postgastrectomy group, the three postoperative deaths have already been discussed There were five patients who developed symptomatic stomal ulcers, one of whom died from perforation six months after resection Two patients developed severe dumping syndromes and two had recurrences of ulcer symptoms

Of the 14 failures after vagotomy, four patients required further surgery because of persistent severe atony three weeks to three and one-half months after nerve section There were recurrences of ulcer symptoms in the remaining 10, seven of whom had gastric resection performed from three weeks to 42 mo after vagotomy Altogether, of these 14 cases, 11 underwent subsequent gastroenterostomy or gastric resection, and three of these died postoperatively Despite the antecedent vagotomy, marginal ulcers later developed in three patients, in two after gastric resection and in one after gastroenterostomy

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[7] Priviteri C. Gastrointestinal Roentgenographic Observations in Peptic Ulcer Patients Treated by Vagotomy Am. J Roentgenol 65 561 1951

These observations indicate a clear-cut superiority of gastric resection over vagotomy in a selected group of patients with duodenal ulcer As previously noted, we have not included those patients having duodenal ulcer with any degree of gastric retention In other reported series such patients are customarily included If we were to add these, the percentage of patients improved after gastric resection would be increased from 87 0% to 90 8%

DUODENAL ULCER WITH OBSTRUCTION

We will briefly consider the end results of subtotal gastrectomy for obstructed duodenal ulcer of which there were 71 cases in this series The characteristics of this group have been noted in Table 1 There was one postoperative death (pulmonary embolus) for a case fatality rate of 1 4% Follow-up observations were made in 100% of the cases from 12 to 71 mo postoperatively, an average of 34 mo Rehospitalization or clinic visits were obtained among all but three patients from whom questionnaire responses were obtained A moderate dumping syndrome was noted in one patient (1 4%), and stomal ulcers in three (4 3%) Of 26 patients with preoperative bleeding, only two noted this symptom in the follow-up period End results were excellent in 39, good in 27, fair in 2, a total of 68 patients, or 95 7%, improved Symptomatic failures were noted in two instances, a finding which, together with the single postoperative death, accounted for 4 3% of the failures in the group It is readily noted that the results in this group are substantially better than in that of the nonobstructed ulcer cases

TABLE 3 —*End Results in Controlled Series of Patients with Duodenal Ulcer*

	Gastrectomy		Vagotomy	
	No	%*	No	%*
Excellent	38	41.3	6	14.6
Good	33	35.9	10	24 4
Fair	9	9.8	11	26.8
Total improved	80	87 0	27	65.8
Failures	9	9.8	13	31 7
Postoperative deaths	3	3.3	1	2 4
Total failures	12	13 1	14	34.1

* Percentages are based on definitive cases in which the end result could be established

GASTRIC ULCER

We have not used vagotomy in cases of gastric ulcer because of the risk of leaving behind a cancer Gastric resection has been recommended in all patients with gastric ulcer who have not promptly and completely responded after a strict medical regimen of not longer than two months Since we cannot, in this group, compare vagotomy with gastric resection, we shall only briefly outline our results with the latter procedure

There were 32 cases in which the diagnosis of benign gastric ulcer was confirmed by histological examination Patients were all men, with ages ranging from 31 to 65 yr, the mean age was 51 yr Thirty-one were white and one Negro Duration of symptoms varied from one month to 40 yr, the average was 7 7 years Symptoms were pain alone in 22, bleeding alone in one, and both pain and bleeding in nine cases There were no postoperative deaths All patients but one have been followed from six to 47 mo Of the group followed, personal interview or rehospitalization was achieved with all patients but one, from whom satisfactory questionnaire information was received There was no development of persistent dumping syndromes or marginal ulcers in any of the patients during the period of observation to date Twenty patients had excellent results, eight were rated as good, two as fair, and only one as a failure This makes a total of 97% of the group benefited by resection

Gastric resection was performed in one instance of a radiation gastric ulcer following 1,000,000-v radiation therapy for metastatic carcinoma of the testicle The surgical result was good after 22 mo, but the patient was dying of metastases

Subtotal gastrectomy was performed in four cases of chronic hypertrophic gastritis in each of which there was preoperative suspicion of cancer There was one postoperative death from evisceration, peritonitis, and efferent loop obstruction The remaining three patients have been followed from 23 to 39 mo with good results in two, and fair in one

Gastric resection was performed incident to a block resection of the stomach, jejunum and colon in two cases of gastrojejunocolic fistula One patient died from a recurrence of his fistula and intestinal obstruction after 29 mo The other patient had a good result after 20 mo

MARGINAL ULCER

In the marginal ulcer group there were nine patients treated by gastric resection and 11 by vagotomy Characteristics of the two groups are listed in Table 4 In either group the indications for operation were basically the same, namely, ulcer pain with or without bleeding, failure to respond to a hospital medical regimen, and the roentgenologic demonstration of an ulcer crater at or near the gastrojejunal stoma Although the great majority of the vagotomized group showed early good results, further follow-up showed additional failures, three of whom required further definitive surgery during the follow-up period All of the gastric resections were performed for marginal ulcers following previous gastroenterostomies However, only four of the vagotomized group had this background, the remainder having developed marginal ulceration following previous gastric resection In the former group there were two failures, and two improved, in the latter group there were three failures, and four improved

Although comparable in most respects, these two groups are too small for the derivation of precise conclusions However, it is reasonably apparent that vagotomy does not possess any special advantage insofar as end results are concerned

COMMENT

There are undoubtedly many unsatisfactory aspects of both surgical procedures Technical difficulties are present in the performance of either vagotomy or gastric resection, and each carries a significant mortality and a high incidence of undesirable sequelae The frequency and extent of these side effects will vary with many factors, including the selection of cases, surgical technique, the length and frequency of follow-up examination, and the criteria utilized to judge the results We have attempted to establish more precisely the relative advantages and disadvantages of vagotomy and gastric resection by comparing observations in a carefully controlled series in which many variables have been minimized or eliminated

In gastric resection the importance of removing adherent ulcers distal to the first portion of the duodenum has been emphasized by Lewisohn [8] and Hinton [1b] On the other hand, Wangensteen,[9] Colp [10] and Rienhoff [1e] have stated that if adequate resection is performed, such ulcers could be retained without influencing the end results In our series, out of 75 cases in which it was determined that the ulcer was removed, the number of failures was eight (10 7%), whereas in 12 cases in which the ulcer was left behind the number of failures was three (25%) The statistical significance of this difference in end results is open to question because of the small number of cases involved At any rate, factors other than a retained ulcer are at play, which might account for the reported poor results in this type of case

TABLE 4 —*Analysis and End Results in Cases* of Marginal Ulcer*

	Gastric Resection	Vagotomy
Number of cases	9	11
Age deviant	43-65 yr	28-57 yr
Age mean	52 yr	45 yr
Race ratio of white to Negro patients	9/0	11/0
Duration of symptoms mean	6 yr	7 yr
Follow-up percentage	100%	100%
Duration of follow up	12 58 mo	12-42 mo
Average follow up	33 mo	27 mo
Results		
Excellent	3	0
Good	3	4
Fair	1	2
Total improved	7 (78%)	6 (55%)
Failure	1	5
Postoperative death	1	0
Total failure	2 (22%)	5 (45%)

* Patients in both groups were all men

The cases of gastric resection were analyzed to determine if certain other variable factors influenced the end results, and none were found The performance of either a Hofmeister or Pólya type of anastomosis—or its placement in front of or behind the colon—did not significantly influence the final results in this series

SUMMARY AND CONCLUSIONS

A critical analysis of the two most commonly utilized forms of surgical treatment of peptic ulcer, namely, subtotal gastrectomy and vagotomy, is presented The study is based on 263 consecutive gastrectomies and 54 consecutive vagotomies concurrently performed at the U S Veterans Hospital, Bronx, N Y , during the four-year period 1945-1948 From the cases of duodenal ulcer, two groups were selected that were comparable in all significant variables except in the definitive surgery employed To evaluate the effect of nerve section on the ulcer process, vagotomy was not combined with gastroenterostomy or other procedures that might have obscured the issue

The value of the study is enhanced by a very high rate of follow-up—100% in the vagotomy group and 98% in the gastric resection group Follow-up intervals varied from 12 to 71 mo , with an average of 34 mo Only 5 5% of follow-ups were by questionnaire, the remaining patients being personally interviewed and, in almost 50% of the cases, being briefly hospitalized so that more exact laboratory and roentgenologic evaluations might be obtained

The case-fatality rate after vagotomy was 2 4%, after gastric resection, 3 2% Early postoperative complications were of the same order of frequency, but those following gastric resection were considered of more serious consequence Undesirable late complications, on the other hand, were significantly higher in the vagotomized group

In the comparable groups of patients with nonobstructing duodenal ulcer treated by gastric resection and vagotomy, the following significant observations were made

1 Gastric resection was followed by dumping syndromes of varying degrees of severity in 10 2% of the cases Vagotomy had gastric atony as its most frequent sequel, this occurring to a significant degree in 46 3% of the cases and being severe enough to make further definitive surgery mandatory in 19 5% of all vagotomies

2 Marginal ulcers could be demonstrated in 5 8% of the resected group Recurrent or persistent active ulceration was observed in 36 7% of the vagotomized patients

3 Among patients with a preoperative history of bleeding, recurrence of this symptom, to a varying degree, was noted in 13 6% of the resected patients and in 31 0% of the vagotomized group

4 Over-all final evaluation showed 87% of the patients improved and 13% regarded as failures after gastric resection, and 65 9% improved and 34 1%, failures after vagotomy

When the entire gastric resection group—with obstructing as well as nonobstructing ulcers—is compared with the vagotomy group, the balance is even more in favor of resection, 90 8% of the patients improved and 9 2% classified as failures

A comparative analysis of small groups of anastomatic (gastrojejunal) ulcers treated by gastric resection (nine) and by vagotomy (11) showed the following results After gastric resection improvement was observed in 78% and failure in 22% of the cases After vagotomy, improvement was obtained in only 55%, and there was failure in 45%

From these studies it appears that gastric resection can be expected to produce significantly superior results in the elective surgical treatment of intractable duodenal ulcer

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[8] Lewisohn R. Treatment of Duodenal Ulcers Partial Gastrectomy Versus Palliative Resection J A. M. A. 134:571 (June 14) 1947

[9] Wangensteen O H The Role of the Surgeon in the Management of Peptic Ulcer New England J Med. 236 191 1947

[10] Colp R. Klingenstein P Mage, S and Druckerman, L. Subtotal Gastrectomy for Duodenal Ulcer Ann Surg. 120 170 1944

ANATOMIC STUDY OF BENIGN AND MALIGNANT GASTRIC ULCERATIONS

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The differentiation, on purely clinical grounds, of a benign from a malignant gastric ulcer, while one of the most commonplace problems in medicine, is one of the most perplexing Most criteria of supposed value have been proved to be extremely fallible [1] It has been stated by Allen and Welch [2] that at best there is a 35% error in the diagnosis of gastric lesions The diversity of opinion (brought to light in a panel discussion) among a group of experts as to the relative value of the various diagnostic criteria clearly demonstrates the cause of much of the confusion in this problem [3] And while it is freely admitted that in any given case of a gastric ulcerating lesion there may be disagreement over the diagnosis, *agreement, at least, should be reached over the diagnostic* significance of the various clinical findings

The size of the crater and its location in the stomach are the two features that have been given the greatest importance in the differential diagnosis of benign and malignant lesions Since the writings of Alvarez and MacCarty [4] in 1928, ulcer craters of more than 4 cm in diameter have been considered to be virtually always malignant Similarly, prepyloric locations and positions along the greater curvature are widely considered to indicate malignancy Yet the participants in the panel discussion to which previous reference was made failed to agree on these important points

Patently, it should be possible by sufficient anatomic study to put such criteria to the test It is the purpose of this report to present such a study, directed at evaluating the validity of some of the established criteria It is hoped that with sufficient data the relative values of the various clinical findings can be established and given their proper weight in any diagnostic consideration,

MATERIAL AND METHODS

The study includes all patients with benign or malignant gastric ulceration who were examined postmortem at the Mallory Institute of Pathology of the Boston City Hospital from 1940 to 1949 Only those lesions forming discrete excavated craters have been included, All fungating or scirrhous carcinomas of the stomach, with or without ulcerations, have been discarded These latter types of lesions are for the most part readily diagnosed both *roentgenologically and gastroscopically* and are not usually confused with benign peptic ulcerations The study has further been limited to patients 50 yr of age or over because it is in this age group that differential diagnosis is most difficult There were 8,493 autopsies performed at the Mallory Institute of Pathology during the period under study Of these, there was a total of 234 cases of gastric ulceration suitable for inclusion in this report. One hundred sixty-eight patients had benign and 66 had malignant ulcerating lesions Each case was studied as to the sex and age of the patient, the size and site of the ulcer, and the cause of death These features will be discussed separately

Table 1 —*Age Distribution of 234 Cases of Gastric Ulceration*

Age Group	Total	Benign		Malignant	
		No	%	No	%
50-59 yr	48	40	83.3	8	16.7
60-69 yr	80	52	65	28	35
70-79 yr	81	58	71 6	23	28.4
80 yr and over	25	18	72	7	28

Age —The age of the patient has always been considered to have some differential diagnostic value In a general way, benign peptic ulceration has been considered to be a disease of the younger person, while its malignant counterpart is supposed to occur more frequently in the older person Accordingly, it was of interest to analyze the age distribution of the current series of ulcers under study The findings are presented in Table 1

In considering the above distribution it is well to remember that these figures represent a consecutive series of ulcers found in postmortem studies in a laboratory of a large municipal hospital They do not include surgical material or agonal ulcerations that often develop during the last days of life As such, the relative frequencies of benign and malignant ulcerations are subject to the modifying influence that surgical removal more frequently occurs in gastric cancer than in benign ulcerations. It is *likely, therefore,* that the relative numbers of benign and malignant ulcers in this series will be weighed in favor of the benign lesions In the present series the number of malignant ulcers rises from eight in the sixth decade to 28 and 23, respectively, in the seventh and eighth decades Similarly, the incidence of benign ulceration shows a rise with advancing age, the numbers being 40, 52 and 58 in the sixth to the eighth decades Some of this apparent rise in incidence is due to the fact that the age distribution of patients examined postmortem shows a considerably larger number of cases in the seventh and eighth decades as compared with the sixth

If the incidence of ulcerations is corrected for the number of autopsies *performed* in each age decade, then malignant ulcers show a slight increase in frequency with advancing age and the benign lesions tend to remain at a constant level of frequency These figures are only of significance insofar as they demonstrate that benign lesions do not decrease in the later years of life and are by no means uncommon in the aged [5]

Table 2 —*Analysis of the Size of 190 Benign and 68 Malignant Gastric Lesions*

Size	Benign Ulcers		Malignant Ulcers	
	No	%	No	%
1 cm or less in diameter	65	34.2	3	4 4
1.1 cm to 2 cm	62	32.6	11	16.2
2.1 cm to 3 cm	24	12.6	9	13.2
3.1 cm to 4 0 cm	14	7 4	9	13.2
4 cm and over	20	10.5	33	48.5
Unknown	5	2 6	3	4 4

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[1] Rivers A B and Dry T J Differentiation of Benign and Malignant Gastric Ulcers Unreliability of Diagnostic Criteria Arch Surg. **30** 702 715 (April) 1935

[2] Allen A W and Welch C E Gastric Ulcer Significance of This Diagnosis and Its Relationship to Cancer Ann Surg **114** 498 509 (Oct.) 1941

[3] The Relationship of Gastric Ulcer to Gastric Cancer panel discussion Cancer **3**: 515 552 (May) 1950

[4] Alvarez, W C and MacCarty W C. Sizes of Resected Gastric Ulcers and Gastric Carcinomas J A M A **91** 226-231 (July 28) 1928

[5] Rafsky, H A. Weingarten M and Krieger C I Onset of Peptic Ulcer in Aged J A M A **136** 739-742 (March 13) 1948 Kiefer E D and McKell D M Jr Peptic Ulcer in Aged ibid **133** 1055 1060 (April 12) 1947

Sex—Male predominance in the ratio of 2 5 to 1 in this series, in both benign and malignant ulcerations of the stomach, is a well-established fact

Size—The most widely emphasized differential criterion between benign and malignant ulcers is the size of the crater Table 2 presents an analysis of the size of 190 benign and 68 malignant lesions in the stomach

It is apparent that most benign ulcers are small, approximately two-thirds (67%) being less than 2 cm in diameter By contrast, only 14 malignant ulcers, 20 6% of the series of 68, were less than 2 cm in diameter However, it is not the relative incidence that is important, but the fact that malignant ulcers may be small or contrariwise, not all small ulcers are benign Considerable emphasis has been placed on the differential importance of the 4 cm crater[4] We found that approximately 50% of malignant ulcerations were less than 4 cm , and at the same time 10 5% of the benign ulcers were more than 4 cm These figures are in striking contrast to those of Alvarez and MacCarty, who found that in surgically removed specimens all benign ulcers were less than 4 cm and only 23 2% of carcinomas were less than 4 cm

Analyzed from still another viewpoint, in this series, 84% of all ulcers less than 4 cm were benign and 16% were malignant When the group of lesions more than 4 cm in diameter is considered, it is seen that 62% are malignant and 38% are benign These latter figures, however, must be subject to the correction that malignant ulcers of this size are more apt to be surgically excised than their benign counterparts and thus would not be included in this analysis It is concluded that the size of the ulcer crater has only a limited value as a differential diagnostic point The largest benign ulcer in this series measured 12 by 8 cm Conversely, the many malignancies found as small craters less than 2 cm in diameter were not merely incidental findings Many were clinically diagnosed and some caused death of the patient.

TABLE 3—*Analysis of the Site of Gastric Ulcerations*

	Prepyloric	Body	Cardia	Greater Curve	Lesser Curve	Anterior Wall	Posterior Wall
Benign	87 (58%)	52 (35%)	11 (7%)	24 (14%)	78 (47%)	21 (13%)	44 (26%)
Malignant	34 (56%)	19 (31%)	8 (13%)	23 (27%)	33 (39%)	10 (12%)	19 (22%)
Total no ulcers	121	71	19	47	111	31	63

Site—It is difficult to describe the exact localization of a lesion in a complex three dimensional organ such as the stomach For purposes of our study, however, they were considered under two classifications The first divided the stomach into three anatomic subdivisions the cardia, the body and the prepyloric region, which has been arbitrarily designated as the portion 3 cm proximal to the pyloric ring The second classification of sites considered the lesions in respect to their positions along either the curvatures of the stomach or the anterior and posterior walls Many craters were found overriding some of these artificial boundaries, and were considered in both categories, making an apparent increase in the total number of lesions studied Since the descriptions were not sufficiently detailed on occasion to permit accurate placement of the lesion, the total number of ulcers in the two tables may not necessarily be identical The distribution is presented in Table 3

Table 3 graphically illustrates that there is no area of the stomach immune to malignancy The areas of greatest predisposition to ulceration appear to be the prepyloric region Of the series of benign ulcers, more than half (58%) occurred in the prepyloric region, and almost the exact proportion of malignancies (56%) occurred in this same region

In the benign ulcer group most occurred on the lesser curvature, 47% as contrasted with 14% along the greater curvature For the malignant group it is of great interest that a high proportion of these cancers occurred along the lesser curvature (39%) and only 27% were placed on the greater curvature These observations contradict many previous clinical concepts and are at variance with those reported by Allen and Welch[2] These authors reported lesions on the greater curve as being virtually 100% malignant, and prepyloric 65% malignant However, their figures were obtained from surgically resected stomachs whereas our cases were obtained from autopsy specimens

Hemorrhage and Perforation—Two of the important complications of gastric ulceration are hemorrhage and perforation Bleeding probably occurs at some time in most ulcerating gastric lesions However, in this report only severe bleeding as evidenced by signs of gross blood found in the gastrointestinal tract at autopsy were included in this category It will be shown that hemorrhage is a frequent cause of death In cases where hemorrhage was not the chief cause of death it was a contributing factor

It is shown in Table 4 that perforation occurred almost as frequently in benign ulcerations (18%) as in malignant ones (12%) Significant hemorrhage, however, was commoner in benign peptic ulcers (37%) than in cancerous ulcers (27%) The hemorrhage tends to be more severe in benign ulceration often causing death These figures essentially agree with those of Portis and Jaffe,[6] who reported that hemorrhage had occurred in 22 (18%) of 120 post-mortem examinations of patients with gastric ulcers, and perforation had occurred in 24, or 20%

DIAGNOSIS

The difficulty of diagnosing gastric ulcerations in large municipal hospitals is borne out by the analysis of the clinical diagnoses in this series of cases (Table 5)

The correct diagnosis of gastric ulceration, benign or malignant, was infrequent in our series Only cases in which the diagnosis had been firmly established by the service are listed as correct diagnoses In many instances termed "not diagnosed and symptomatic lesions," the diagnosis was suspected but not clearly established In these cases there may have been ulcer symptoms in the past history, or the patient may have entered the hospital because of some other problem and was in the process of being worked-up when death occurred

The incidental group was made up of cases without any findings in the available history leading to a suspicion of gastric ulceration Perhaps a more careful history might have disclosed many more of these The nature of this hospital, a municipal institution to which are brought many emergency cases, accounts for the high percentage of acutely ill patients who are brought in with little previous history available, and no time for diagnostic evaluation These patients often die within hours of admission to the hospital, during which time all efforts have been focused on the therapy of the acute symptoms

TABLE 4—*Distribution of Hemorrhage and Perforation in Gastric Ulceration*

	Benign Ulcers (168)		Malignant Ulcers (66)	
	No	%	No	%
Massive hemorrhage	62	37	18	27
Perforation	31	18	8	12

The malignant ulcerating lesions were divided according to the same criteria In the malignant group the *num-*

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[6] Portis J A and Jaffe R H Study of Peptic Ulcer Based on Necropsy Records J A M A 110 6-13 (Jan 1) 1938

ber of correct diagnoses established was somewhat better than in the benign group Perhaps the better record in the cancer cases is possible because of the number of patients entering with masses in the abdomen, obviously malignant, with gastric symptoms indicating the stomach as the primary site Although some were suspected, still a large percentage (45%) were not definitely diagnosed

Although our figures are weighed against the clinical service insofar as suspicion of gastric ulceration was not accepted as a diagnosis, in a study of this type they indicate the difficulties inherent in the establishment of a definite diagnosis

CAUSE OF DEATH

Table 6 presents a comparative study of causes of death in the two types of ulcer lesion The complications of benign gastric ulcerations, hemorrhage and perforation, were a very significant cause of death (43%) in this group of patients Hemorrhage was the leading cause of death (26%) Peritonitis secondary to perforation was the third most frequent cause of death (17%), cardiac difficulty was the second (20%) The other causes of death were mostly concomitant or intercurrent unrelated diseases No particular disease entity was found which showed any apparent relationship to ulcerating gastric lesions The high incidence of complications directly attributable to benign ulceration, namely hemorrhage or perforation, is noteworthy This becomes of greater importance when it is realized that some of these lesions included in this series were merely incidental Moreover, since more than 8,000 autopsies were screened for gastric lesions, it cannot be said that these proportions are weighted by an unusual number of severe lesions The significance of these findings is obvious in the older age group Therapy of benign ulceration must take into consideration the high risk of serious, frequently fatal, complications

TABLE 5—*Analysis of Clinical Diagnoses in Gastric Ulceration*

Diagnosis	Benign No	Benign %	Malignant No	Malignant %
Diagnosed and symptomatic	19	11	25	38
Not diagnosed and symptomatic	19	11	6	9
Not diagnosed and asymptomatic (incidental)	75	45	5	8
Died within 48 hours of entering hospital	55	33	30	45

In the malignant group, 54% of the patients died with extensive metastatic spread of their gastric cancer Hemorrhage (12%) and perforation (9%) were relatively less significant in the malignant group than in the benign. It must be remembered that the patients in the malignant group are exposed to a specific risk, namely metastatic spread, to which the benign group is not exposed Nevertheless, since patients with a metastatic gastric malignancy may still die of hemorrhage, it is justifiable to compare the 26% rate of fatal hemorrhage in benign ulcerations with the 12% rate in malignant ulcers Further, the 17% rate of peritonitis in benign ulcers due to perforation is considerably higher than the 9% rate in the cancer group Thus, hemorrhage and perforation constitute criteria of differential significance in the diagnosis of bleeding and perforated gastric lesions

SUMMARY AND CONCLUSIONS

From the preceding anatomic analysis it is possible to draw certain conclusions relative to the fallibility of some of the old "time-tested" criteria With reference to age it is indicated that gastric ulcers occurring in patients over 50 yr of age cannot be assumed to be malignant While this study of autopsy material does not permit an accurate estimate of the relative incidence of benign and malignant ulceration, it does make apparent the fact that benign ulceration is by no means uncommon in the three decades over 50 The number of both benign and malignant ulcers steadily mounted through these three decades This increase merely reflects in part the greater numbers of post-mortem examinations performed in these age groups When the data was corrected for the number of autopsies performed in each decade, benign ulcers were found to occur in approximately the same ratio through the three decades, while malignant ulcers showed a slight but progressive rise in incidence It is important to note that even in the eighth decade the incidence of benign ulceration is high

TABLE 6—*Comparative Study of Causes of Death in Ulcer Lesions*

Cause of Death	Benign Ulcers No	Benign Ulcers %	Malignant Ulcers No	Malignant Ulcers %
Hemorrhage	43	25.6	8	12.1
Peritonitis	29	17.2	6	9 1
Cardiac	35	20.8	7	10.6
Pneumonia	15	8.9	1	1.5
Cancer	14	8.3	0	0
Cerebral vascular accident	8	4.8	2	3.0
Uremia	6	3.6	1	1.5
Cirrhosis of liver	4	2 4	0	0
Pulmonary tuberculosis	4	2 4	2	3.0
Diphtheria	1	0 6	0	0
Leukemia	2	1.2	0	0
Acute pancreatitis	1	0 6	0	0
Hypoprothrombinemia	1	0.6	0	0
Liver abscesses	1	0 6	0	0
Drug toxicity	1	0.6	0	0
Shock	2	1.2	0	0
Pyloric obstruction	0	0	1	1.5
Carcinomatosis	0	0	36	54 4
Empyema	0	0	1	1.5
Pernicious anemia	0	0	1	1.5
No anatomic cause of death	1*	0.6	0	0

* Autopsy restricted no cause of death found

The concept that the size of the ulcer crater has an important bearing on its malignancy has been shown to be quite unreliable Approximately one-tenth of all the benign ulcers were more than 4 cm in diameter, and 38% of the total mixed group of benign and malignant ulcers more than 4 cm in size were benign This percentage distribution is undoubtedly high because of the exclusion of surgical material Therefore, the size of the crater can have only limited differential diagnostic value

The ulcer site in this series was shown to be of little differential value Carcinomatous ulcers were found in all areas of the stomach, and in numbers sufficient to warrant confusion with benign ulcers in the same areas In the present study, two-thirds of the lesions in the prepyloric area were benign On the greater curve 51% of the lesions were benign On the lesser curve 29% of the lesions were malignant The relative proportions of these lesions is of considerably less importance than the fact that benign and malignant lesions were intermingled in all areas of the stomach These results are at definite variance with some previous clinical concepts

Hemorrhage and perforation with peritonitis were found to be of great clinical significance in ulcerating lesions, being the first and third most frequent causes of death in benign gastric ulcerations Together these causes are responsible for 43% of the deaths in the benign group Hemorrhage and peritonitis also occurred as causes of death in cases of carcinomatous ulcers However, in this group, 54% of the patients died from extensions of their cancerous lesions Moreover, as differential points, hemorrhage and perforation are much commoner in benign lesions than in the malignant.

This study serves to reemphasize the fallibility of absolute dependence on any clinical feature in the differential diagnosis of benign and malignant gastric ulcers The proper diagnosis, when possible, can be arrived at only by the use of many clinical findings, each of which is of uncertain significance but whose combined value may permit a reasonably accurate decision

DRUG FATALITIES

Nathan Flaxman, M D , Chicago

There have been 107 drug fatalities reported in the literature since December, 1946 These deaths were not from poisonings of the accidental or suicidal type but occurred in the use of regularly advised and prescribed drugs Isolated case reports have emphasized this fact These deaths resulted not only from drugs given orally and parenterally, but also from certain ones used in diagnostic procedures

Dragstedt considered the course of events attending the advent of a new drug It is synthesized by the chemists, it undergoes various screening tests as to its actions and effects by the pharmacologists, its toxicity is surveyed in laboratory animals, it is distributed for controlled clinical investigation, it shows some therapeutic merit, it is released for general therapeutic trial, and then, usually within three or four months, reports describing its unexpected and untoward actions begin to appear Smith discussed all aspects of safeguards in the use of new drugs and expressed the belief that the question, "Does the toxicity outweigh the therapeutic advantages, keeping in mind the seriousness of the conditions for which it is being offered?" is the deciding factor However, as the present analysis shows, not all reactions are due to new drugs

ORAL MEDICATIONS

Bishydroxycoumarin U S P (Dicumarol®) —This was the commonest cause of fatalities resulting from drugs given orally Eleven fatal hemorrhages were reported, bringing the total number of recorded deaths to 32 Even with careful laboratory control over a long period, and despite long prior use without serious complications, these fatalities occurred Link, the synthesist of this drug, commented that the briefest meditation on the strictly theoretical aspects of the clotting phenomena leaves one with the appalling feeling that tampering with coagulability of blood is a hazardous business A considerable number of nonfatal reactions have occurred, and these, along with those due to other drugs, will be discussed separately

Antiepileptic Drugs —Abbott and Schwab reported that the newer anticonvulsant drugs produce moderately severe, but reversible, side reactions in about 35% of patients and dangerous toxic ones in 1 to 2% Methylphenylethylhydantoin (mesantoin®) caused three fatalities—two due to pancytopenia and one to a fulminating bullous dermatitis Trimethadione (tridione®) was blamed for a fatal pancytopenia, two other instances having been reported in 1946 Phenacemide (phenurone®) was considered the probable cause of a hepatorenal syndrome and an aplastic anemia Such severe depression of the bone marrow generally results from prolonged use of the antiepileptic drug Blood examinations should not be omitted at any time while the drug is being used or for a period after it has been discontinued Bromides, phenylhydantoin (dilantin®), mephobarbital (mebaral®), and phenobarbital are safe drugs in the treatment of epilepsy

Lithium Chloride —Three known fatalities resulted from the use of this drug as a substitute for sodium chloride in the diet The lithium preparations were immediately withdrawn from the market

Sulfonamides —Fatalities from the sulfonamides continue to occur A fatal reaction to phthalylsulfathiazole U S P (sulfathalidine®) in the treatment of subacute nonspecific ulcerative colitis (one case) and fatalities due to sulfadiazine nephrosis (one case), and sulfathiazole anuria (two cases) were reported.

Antithyroid Drugs —Thiouracil caused two fatalities, one due to acute yellow atrophy and the other to agranulocytosis Although no known deaths have occurred from use of the other antithyroid drugs, both propylthiouracil and methylthiouracil have caused difficulties

Acetylsalicylic Acid —This drug was cited as the cause of two deaths—one from the ingestion of 2 56 gm in a period of 14 hours by an infant, and one from the ingestion of 5 to 6 1 gm (15 to 20 tablets, 5 grains [0 325 gm] each) in a period of three hours by a man The reported cases of poisoning by this drug were evaluated, and only a few fatal instances were found in which the administration was reliably observed by a physician and the exact dose known

Other Drugs —Fatalities due to the thiocyanates, ertron® (a concentrated vitamin-D preparation), cinchophen, tetraethylthiuram disulfide (antabuse®), and pyrithylidine (presidon®) occurred The last-named drug, pyrithylidine, was immediately withdrawn from the market and all use of it discontinued by the pharmaceutical manufacturer This, unfortunately, cannot be said of the others cited, although some of them, such as the

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Associate in Medicine, Chicago Medical School Consulting Physician Manor Hospital thiocyanates and cinchophen, have a long record of repeated severe toxic effects and fatalities. The value of these two drugs in the treatment of essential hypertension and arthritis, respectively, is decidedly questionable, while the dangers inherent in their use are very great.

PARENTERAL MEDICATIONS

Antibiotics.—Here a paradoxical situation of importance exists. There is no question of the value of the antibiotics, yet 11 fatalities, six due to penicillin and five to streptomycin, were reported. Penicillin deaths were due to exfoliative dermatitis, Jarisch-Herxheimer reactions in syphilitic patients, and anaphylaxis. Streptomycin caused fatal toxic encephalopathy and dermatitis with stomatitis. The neurotropic effects of streptomycin are particularly likely to manifest themselves in patients with renal or hepatic insufficiency.

Curare.—Curarization, both in anesthesia and before electroshock therapy, resulted in nine fatalities due to respiratory arrest. The amount of the drug used and the time of onset after injection varied. Bilateral pulmonary collapse without evidence of tracheobronchial obstruction followed within three minutes the injection of 60 units of purified *Chondodendron tomentosum* extract (intocostrin®) while an anesthetic was being administered. In another instance 100 units of *d*-tubocurarine chloride was given to permit bronchoscopy, and the patient died as a result of respiratory arrest in 165 minutes.

Mercurial Diuretics.—Cases of sudden death due to these drugs and of fatal mercurialism continue to be reported. Wallner and Herman cited the case of a 50-year-old man with hypertensive cardiovascular disease who was admitted because of pulmonary and peripheral edema and received 2 cc. of meralluride ("mercuhydrin") intramuscularly daily. On the ninth and 10th days the patient had a temperature of 101 and 102 F. after the injections and complained of retrobulbar pain. The diuretic was stopped, and the temperature returned to normal. On the 18th day 2 cc. of meralluride was again given intramuscularly; within 30 minutes the patient went into shock and died five hours after the injection. Apparently, the intramuscular route does not safeguard against unfavorable reactions. The authors condemned the routine use of daily parenteral injections of 2 cc. of a mercurial diuretic. Fatal mercurialism due to the prolonged intravenous administration of mercurophylline injection U. S. P. ("mercupurin") in doses ranging up to 4 cc., given twice weekly to control the edema of a young man who had diabetes with the Kimmelstiel-Wilson syndrome, was also reported.

Neoarsphenamine.—Cases of poisoning due to this drug also continue to be reported. Two cases of arsenical encephalopathy occurred, in both of which penicillin had first been given. Medical shock and death followed use of this arsenical for syphilis in a case of chronic alcoholism.

Aminophylline.—Three fatal reactions followed intravenous administration of aminophylline U. S. P. Two were in patients who had suffered an acute coronary thrombosis, both died during the intravenous injections of the 7½-grain (0.5-gm.) solutions.

"Analbis" Suppositories.—Early in 1947 a number of deaths were attributed to a bismuth compound in the "analbis" suppositories; three cases were reported in detail. All the deaths occurred in children who had been treated with the drug, a bismuth salt of heptatodiene carboxylic acid (diallylacetic acid) for infections of the upper respiratory tract. The suppositories were promptly removed from the market.

Other Parenteral Drugs.—Fatalities occurred from use of tetraethylammonium chloride (etamon® chloride) and tetraethylammonium bromide, anaphylactic shock from a protein digest (amigen®), and an allergic reaction due to the influenza-virus vaccine. Deaths due to the use of emetine hydrochloride in the conditioned-reflex treatment of chronic alcoholism and to the phenol in foille® emulsion in the treatment of burns were also reported.

DIAGNOSTIC PROCEDURES

Angiocardiography.—Twenty-six fatalities occurred in a total of 6,824 examinations reported. Seventeen of the 26 deaths were of children under 8 years of age, all with congenital heart disease. The commonest cause of death was a sudden respiratory arrest immediately or shortly after injection of the contrast substance.

Cholecystography.—Myocardial infarction resulting in three deaths followed the administration of vasopressin injection U. S. P. (pitressin®) for cholecystography. Vasopressin is a powerful vasoconstrictor, particularly of the coronary arteries, and as a diagnostic aid it should be employed with the utmost discretion.

Pyelography.—One sudden death followed the intravenous administration of iodopyracet injection U. S. P. (diodrast®), thought to be of allergic origin.

Myasthenia Gravis.—A fatality was reported to follow the diagnostic test with neostigmine for this disease.

Allergy Tests.—Sudden death due to an anaphylactic reaction to intradermal tests in a 25-year-old woman with asthma and hay fever, and previously desensitized over a period of 13 years, led Harris and Shure to advocate that scratch tests be done first.

SUMMARY AND CONCLUSIONS

Since December, 1946, a total of 107 drug fatalities have been reported in the literature. Oral medications, parenterally administered drugs, and drugs used in diagnostic procedures were equally responsible.

Among the oral medications bishydroxycoumarin U. S. P. (dicumarol®) caused 11 fatal hemorrhages. Two of these were on an outpatient basis, and no laboratory studies were performed. Regardless of the short- or long-term use of this anticoagulant, and despite adequate laboratory control, nine other fatalities occurred. It has been recommended that during treatment with bishydroxycoumarin U. S. P. lumbar sympathetic blocks should not be performed, as fatal retroperitoneal hemorrhages have resulted.

Anticonvulsant therapy with methylphenylethylhydantoin (mesantoin®), trimethadione (tridione®), and phenacemide (phenurone®) resulted in six fatalities

It has been recommended that examinations of the blood be continued not only during the entire period of use, but also for a reasonable period after the drug is stopped, to detect any depression of the bone marrow

Certain drugs, such as lithium chloride and pyrithyldine (presidon®), were immediately withdrawn from the market A similar procedure is recommended for the thiocyanates and cinchophen, two old offenders responsible for many previous serious reactions Tetraethylthiuramdisulfide (antabuse®), as a treatment for alcoholism, requires careful consideration before it is released for use, some time in 1951, not after Any of the sulfonamides and the thiouracil preparation call for continued caution in their administration

Among the parenteral medications, the antibiotics caused the largest number of deaths Certain precautions should not be overlooked in their use A history of allergy, of previous sensitization to the antibiotic, the appearance of a rash, or the presence of cardiovascular or neurological syphilis calls for great caution in the administration of penicillin Renal or hepatic insufficiency is a probable contraindication to the use of streptomycin In the use of curare, either in anesthesia or before electroshock therapy, a definite hazard exists, and death may result from respiratory arrest Continued reports of fatalities due to intravenous and intramuscular administration of mercurial diuretics and to the use of neoarsphenamine call for thought in administering them Intravenous injection of aminophylline in the treatment of acute coronary thrombosis is not advisable

Of the diagnostic procedures, angiocardiography carries the greatest risk in cases of congenital heart disease The utmost caution is advised in the use of vasopressin injection U S P (pitressin®) in the course of routine cholecystography, as myocardial infarction and sudden death may follow its administration It must also be borne in mind that sudden death has followed the intravenous administration of iodopyracet (diodrast®) in pyelography, neostigmine as a diagnostic test for myasthenia gravis, and intradermal tests for allergic states

30 N Michigan Ave

Resistance to Cancer—Although there are many indications that the body does possess a resistance to the growth and to the implantation of secondary deposits this is a field of work that has been neglected We speak of a selective affinity in growth, e g., the liability of carcinoma of the lung to spread to the adrenals In such blood spread there is equal access to many other organs but the growth of the deposit is resisted in other situations It has been demonstrated that the spleen may receive malignant cells in fair numbers and destroy them before they can multiply to give rise to a visible secondary deposit it is better to regard the curious distribution of secondary deposits as determined by relative resistance rather than relative susceptibility Other evidence bearing on resistance is provided by the long delayed recurrence, carcinoma of the breast may be treated with apparently successful results lasting for many years —up to about twenty—and may be followed by a small recurrence in the scar It seems unlikely that this can be a second tumour arising in the breast tissue and one must accept the fact that cells have remained *in situ* but have been kept in check Support is given to the view that there is a breakdown of resistance by the fact that patients with such late recurrences fare badly and usually succumb, with widespread secondary deposits, within a year —R W Scarff The Present Status of the Cancer Problem *The Practitioner* July, 1951

CLINICAL NOTES

HAIR LOSS AND PIGMENTATION DUE TO THIOURACIL DERIVATIVES

A NONHYPOTHYROID SIDE REACTION

Morris Wilburne, M D , Beverly Hills, Calif

Among the side reactions associated with the administration of the therapeutic thiouracil derivatives propylthiouracil and methylthiouracil, in the treatment of hyperthyroidism have been leucopenia and granulocytopenia,[1] agranulocytosis,[2] anemia,[3] thrombocytopenic purpura,[4] dermatoses including pruritis and urticaria,[5] fever,[6] menstrual changes,[7] and others such as nausea, headache, arthralgia, numbness in the extremities, jaundice, Mikulicz's syndrome, and lesions resembling periarteritis nodosa However, with the exception of a recent inquiry [8] in the Queries and Minor Notes section of THE JOURNAL relative to hair loss, there appears to be no report of hair loss or pigmentation directly attributable to methylthiouracil or propylthiouracil The following is a rather striking instance of hair loss and, of lesser importance, yellowish pigmentation of the hair, the former of such pronounced degree as to necessitate discontinuance of these drugs

REPORT OF A CASE

K. W 67, a white woman, was first seen April 29 1949 because of paroxysmal auricular fibrillation and acute pulmonary edema these responded promptly to therapy Investigation revealed evidence of hyperthyroidism dating back to 1942, the earliest symptoms of which were heat intolerance, nervousness, and palpitation Three to four weeks after the onset of symptoms she developed a severe paroxysm of auricular fibrillation which precipitated acute pulmonary edema, the latter necessitating oxygen administration She remained at complete bed rest for six weeks but lost 13 pounds during this period despite her inactivity One month after she became ambulatory, another episode of paroxysmal auricular fibrillation and acute pulmonary edema occurred, she spent an additional two weeks in bed Attacks became increasingly frequent, and approximately one year later, episodes were experienced almost daily, each of one half to two hours' duration Two years after the onset she was placed on intermittent digitalis therapy, and two years later, on continuous digitalis therapy Yet her hyperthyroid state still became worse, with the greatest effect on the cardiovascular system

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[1] (*a*) Eisenmenger W J and Steele, J M Leukopenia Following the Use of Propylthiouracil J A M A **135**: 510 (Oct 25) 1947 (*b*) McCullagh E. P Hibbs R E. and Schneider R W Propylthiouracil in Treatment of Hyperthyroidism Am. J M Sc **214**: 545 (Nov) 1947 (*c*) Meneghini P and Roncallo E. Effects of Nicotinic Acid on Granulocytopenia Due to Methylthiouracil Inform med. Genova **2**: 15 1948 (*d*) Poate H R G Final Results of Long Term Therapy with Methyl thiouracil in Thyreotoxicosis, M J Australia **1** 139 (Feb 4) 1950

[2] Jacobsen H E. L. Agranulocytosis After Treatment with Methyl thiouracil Case Cured by Blood Transfusions and Chemotherapy and Followed by Polycythemia Ugesk f læger **107**: 719 (Aug 30) 1945 Livingston H J and Livingston S F Agranulocytosis and Hepatocellular Jaundice J A. M A **135** 422 (Oct. 18) 1947 Barfred A Methylthiouracil in Treatment of Thyrotoxicosis Am J M Sc **214** 349 (Oct.) 1947 Bartels E C Agranulocytosis During Propylthiouracil Therapy Am J Med **5**: 48 (July) 1948 Juliar B and Harris T L. Fatal Agranulocytosis Occurring During Propylthiouracil Therapy J A M A **139** 646 (March 5) 1949

[3] Loicq R. and Martin L. A Case of Anemia Following Administration of Methylthiouracil Bruxelles-méd **28**: 364 (Feb 15) 1948

[4] Staffieri J J and Cardonnet L. J Thrombocytopenic Purpura as Toxic Manifestation of Methylthiouracil Medicina Buenos Aires **8** 223 (June) 1948 Fewell R A Engel E F and Zimmerman, S L. Acute Thrombopenic Purpura Associated with Administration of Propylthiouracil J A M A **143** 891 (July 8) 1950

[5] (*a*) McCullagh Hibbs and Schneider[1b] (*b*) Astwood E. B and Vanderlaan, W P Treatment of Hyperthyroidism with Propylthiouracil Ann Int Med **25** 813 (Nov) 1946 (*c*) McGavack T H Gerl A J Vogel M and Schutzer S Clinical Comparison of Effectiveness of 6-N Propylthiouracil and 2 Thiouracil as Antithyrotoxic Agents Am J Med **2** 144 (Feb) 1947

[6] McGavack Gerl Vogel and Schutzer[5c] Reveno W S Propyl thiouracil in Thyrotoxicosis Observations on 54 Patients J A. M A **133** 1190 (April 12) 1947

[7] Kopf R Loeser A. and Meyer G Changes in Ovarian Function Induced by Thiouracil and Methylthiouracil Klin Wchnschr *26*: *202* (April) 1948

[8] Loss of Hair Following Use of Propylthiouracil *Queries and Minor Notes*, J A M A. **143**: 860 (July 1) 1950

Physical Examination (May 2, 1949)—Her weight was 119 pounds (54 0 Kg.), height 63 inches (160 02 cm) The hair was white, typical of senility, and was of normally abundant growth There was no exophthalmus The retinal arteries revealed moderate sclerosis The thyroid gland was asymmetrically enlarged, involving primarily the left lobe, the gland substance was soft and nonnodular Blood pressure was 200/95 Heart size was normal, rhythm was regular sinus at this examination The resting heart rate was 84 A moderately loud systolic murmur was present, with maximum intensity at the fourth left interspace 2 cm. lateral to the sternal border The aortic second sound and the pulmonic second sound were of equal intensity The skin was warm and moist Fluoroscopy disclosed slight pulmonary congestion and marked aortic sclerosis The electrocardiogram revealed left axis deviation with evidence suggesting an early left ventricular preponderance pattern Rhythm was of regular sinus origin Basal metabolism was + 35% Blood protein-bound iodine was 12 4 μ per 100 cc. Total blood cholesterol was 342 mg per 100 cc Blood count revealed hemoglobin 84%, red blood cells 5,010,000 white blood cells 7,350 with 43% neutrophiles, 1% eosinophiles, 1% basophiles, 49% lymphocytes, and 6% monocytes Urine was normal Sedimentation rate (Wintrobe) was 18 mm in one hour

Course—She continued to experience severe transitory episodes of auricular fibrillation daily, and on May 21, 1949, she was placed on methylthiouracil, 50 mg twice daily for three days, subsequently increased to four times daily Other medication consisted of digitoxin, 0 1 mg daily, thiamine hydrochloride, 10 mg three times daily, phenobarbital sodium, ½ grain (30 mg.) two to three times daily, and pentobarbital (nembutal®), 1½ grains (0 1 gm) at bedtime Therapeutic response to methylthiouracil was good, a distinct improvement occurring in all symptoms Barbiturates were discontinued on July 20, 1949 By July 23, 1949, the basal metabolic rate had declined to — 9%, and she was placed on a maintenance dose of 50 mg. of methylthiouracil daily Paroxysms of auricular fibrillation diminished in frequency to one paroxysm in six weeks Thiamine hydrochloride was discontinued, without approval, early in August On Aug. 20, 1949, the basal metabolic rate was + 8% It gradually rose, and on Oct 8, 1949, it was + 32% In the latter part of October, she noticed rather rapidly increasing loss of hair This phenomenon became so pronounced that she began to avoid combing her hair because of the ease with which it came out. The severity of the hair loss was verified by the patient's hairdresser, with whom I discussed the problem In addition both the patient and the hairdresser observed a yellowish pigmentation of the hair which had previously been white There had been no deviation from her usual hair care No new hair preparations or hairdressing procedures were employed Medication taken at this time consisted only of digitoxin (which had been increased by an additional 0 1 mg per week) and methylthiouracil, 50 mg daily Inasmuch as the patient was receiving only digitoxin and methylthiouracil, it was felt that the probable offending agent was methylthiouracil, particularly since digitoxin had been taken for several years without previous appearance of this side reaction By November 16, 1949, hair loss had assumed such serious proportions that it was necessary to discontinue further administration of methylthiouracil The basal metabolic rate on Nov 26, 1949, was + 26% Tendency to hair loss completely ceased following discontinuance of methylthiouracil therapy, but concurrently evidence of hyperthyroidism again became pronounced Quinidine sensitivity precluded its use as a prophylactic agent against the increasingly frequent paroxysms of auricular fibrillation It was apparent that some form of antithyroid medication was necessary, and on Dec 10, 1949, therapy was reinstituted cautiously, this time with propylthiouracil in place of methylthiouracil It was hoped that the former would not precipitate the hair loss and, of lesser import, pigmentation of the hair The initial dosage of propylthiouracil was 50 mg daily On Dec 31, 1949, the basal metabolic rate was + 25%, and on Feb 4, 1950, it was + 32% On the latter date the patient was again placed on phenobarbital sodium, ½ grain two to three times daily, and pentobarbital 1½ grains at bedtime Hair loss was minimal On Feb 15 1950, because of incomplete control, the dosage of propyl thiouracil was increased to 100 mg daily Within 10 days the patient reported a pronounced hair loss, however the reaction was not so severe as with methylthiouracil The basal metabolic rate on March 18, 1950, was + 30% Owing to inadequate control of the hyperthyroid syndrome and the limitations imposed on propylthiouracil dosage by the renewed problem of hair loss, radioactive iodine uptake was determined on June 6, 1950, in preparation for radioactive iodine therapy Iodine uptake was 63% despite the "blocking" effect of propylthiouracil, and on June 14, 1950, the latter was discontinued, and radioactive iodine therapy was begun the following day with an initial dose of 6 mc Hair loss disappeared rather promptly after cessation of propylthiouracil and at the time of this report, five months later, had not recurred Thiamine hydrochloride administration was resumed Aug. 2, 1950, without influence on the hair

COMMENT

It is evident from the foregoing that hair loss and pigmentation were, with little doubt, due to methylthiouracil and propylthiouracil The only other medication taken by the patient at the time of this reaction consisted of digitalis in average therapeutic dosage Earlier the patient had received thiamine hydrochloride, 30 mg daily, phenobarbital sodium, 30 mg two to three times daily, and pentobarbital, 0 1 gm at bedtime These had been discontinued at least two months prior to the onset of this side effect, any possible etiologic influence from these sources being thus excluded Further, subsequent resumption of all three drugs caused no recurrence of hair loss or pigmentation

The possibility of hair loss secondary to reduction of the basal metabolic rate to hypothyroid levels is excluded, since no clinical or laboratory evidence of hypothyroidism was manifested at any time In addition, even the euthyroid state was maintained for only a brief period before return to hyperthyroidism It is especially to be noted that hair loss occurred when the patient was, by both clinical and laboratory criteria, in a hyperthyroid state No other factors were evident, there was no deviation in mode of living or in use of hairdressing agents Finally, cessation of hair loss was twice demonstrated on discontinuance of the antithyroid drugs

SUMMARY

A case of hyperthyroid heart disease is reported in which the administration first of methylthiouracil and later of propylthiouracil produced in each instance pronounced hair loss together with moderate yellowish pigmentation of the hair Changes in dosage and discontinuance of medication resulted in parallel effects on hair loss Eventually it was necessary to cease therapy with these drugs and employ radioactive iodine The radioactive iodine did not elicit this side effect The possibility of hair loss due to drug-induced reduction of basal metabolism to hypothyroid levels is excluded, since at no time was there manifested clinical or laboratory evidence of hypothyroidism On the contrary, during the period of hair loss the basal metabolic rate was at hyperthyroid levels The effect of methylthiouracil was more marked than propylthiouracil in precipitating this reaction

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APPROVED INTERNSHIPS AND RESIDENCIES IN THE UNITED STATES

ANNUAL REPORT OF INTERNSHIPS AND RESIDENCIES BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Edward H Leveroos, M.D., William R. Albus, M.D., William W Corbc , M D., William W Southard, M.D and Reynolds Hayden, M D

Annual Report

This year, the Council on Medical Education and Hospitals presents its twenty-fifth Annual Report on Internships and Residencies It is appearing at this time rather than in the spring as in years past, in order to provide prospective applicants with more recent information about approved services at the time they apply for appointment. The report itself is based on data available as of August 1st. The statistics in the report may differ therefore, in some instances, with those found in the lists of approved internships and residencies since revisions in these lists have been made through September 1st.

In addition to listing internships on a geographical basis, including data regarding type of control, bed capacity, annual admissions, number of internships, affiliations, autopsy rates and monthly stipends, a separate section has been included listing these programs by type of service offered rotating, mixed, straight or special internships Hospitals reported by the medical schools as part of their undergraduate teaching program have been identified as major or minor teaching units, depending upon the extent to which the medical school utilizes their services in undergraduate teaching Since the publication of last year's report, there have been two major developments which are of concern to all hospitals approved for intern training the Quota Basis for the Appointment of Interns as announced in recent issues of The Journal,[1] and the Matching Plan sponsored by the National Interassociation Committee on Internships [2] A brief review of these two subjects is included in the report which follows

The section on residencies this year has also been augmented, in addition to a list of approved services by specialties, a geographical list of hospitals approved for residency training has been included, together with a summary of the specialties for which each hospital is approved Basic information regarding approved programs appears in the section in which services are classified by specialty and subspecialty The number of years for which each program has been approved is included for the following categories anesthesiology, dermatology, neurological surgery, neurology, obstetrics-gynecology, orthopedic surgery, pathology, pediatrics, psychiatry, radiology, surgery and urology In all these specialties, the length of the service for which approval has been granted has been determined in collaboration with the American Board concerned

Approval in sixteen other specialty and subspecialty fields are approved without indicating the number of years for which the program is accredited In many of these fields, however, residencies are ordinarily of one year's duration e g allergy, cardiology, contagious diseases, gastroenterology, malignant diseases, occupational medicine, pulmonary diseases, and the newest specialty for which residencies have been approved, preventive medicine and public health In other specialties, approval has been extended in concurrence with the American Board concerned without specifying the length of the program

The following boards collaborate with the Council in the approval of residency programs

- American Board of Anesthesiology
- American Board of Dermatology and Syphilology
- American Board of Internal Medicine
- American Board of Neurological Surgery
- American Board of Obstetrics-Gynecology
- American Board of Orthopedic Surgery
- American Board of Otolaryngology
- American Board of Pathology
- American Board of Pediatrics
- American Board of Physical Medicine
- American Board of Plastic Surgery
- American Board of Preventive Medicine and Public Health
- American Board of Proctology
- American Board of Psychiatry and Neurology
- American Board of Radiology
- American Board of Surgery
- The Board of Thoracic Surgery
- American Board of Urology

Residency programs in internal medicine are now approved by the Council, the American Board of Internal Medicine, and the American College of Physicians through the Conference Committee on Graduate Training in Medicine Approval in the subspecialties of allergy, cardio-vascular diseases, gastro-enterology and pulmonary diseases is granted by the Council in concurrence with the Subspecialty Board concerned

In general surgery, residencies are approved by the Council, the American Board of Surgery, and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery This committee, established little more than a year ago, has been responsible for the development of a uniform set of standards for approval in the specialty, of a list of hospitals offering residency training in surgery approved by the three organizations represented on the committee, and for the establishment of a single hospital inspection procedure A number of other surgical specialty boards have expressed their interest in the possibility of developing a similar arrangement in their particular field Preliminary discussions with this end in view have been initiated in several of these specialties

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[1] June 30 1951 Vol 146 pp 865 and 866 Sept. 8 1951 Vol 147 pp 168 and 169

[2] A description of the Matching Plan for Internship Appointment F J Mullin and John M Stalnaker National Interassociation Committee on Internships

Data in this report and in the lists of approved programs which follow, are based on information submitted by the hospitals conducting approved training programs For their co-operation in making this report possible the Council wishes to make grateful acknowledgment It also takes this opportunity to express appreciation for the splendid assistance and collaborative effort of the American College of Physicians, the American College of Surgeons and the seventeen American specialty Boards which participated in the residency approval program For their part in the preparation of this report, the Council is also indebted to medical schools and to the medical departments of the federal services With the support of all these organizations, groups and individuals, the Council is able to present this report for the guidance of prospective applicants planning their postdoctoral training as well as for the general information of the profession, medical educators, hospital administrators and others interested in graduate training

TABLE 1 —*Approved Hospitals, Internships and Medical School Graduates, 1941-1951*

Year*	Number of Hospitals	Number of Internships	Number of Graduates
1941	785	8 182	5 275
1942	740	8,353	5 163
1943	760	8 180	5 223
1944†	760	6 602	10,303‡
1945	785	8 429	5 136
1946	798	8,584	5,826
1947	764	8,539	6,389
1948	807	9 118	5,543
1949	837	9 124	5 094
1950	799	9,398	5,553
1951	828	10 044	6 135

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* Year of publication
† Quota year
‡ Includes 2 classes
(U S Army U S Navy Hospitals and those outside the United States not included in 1941 to 1947 figures)

Internships

The number of internships offered in approved hospitals last year reached an all time high The upward trend which has been evident for the past ten years continued with 828 hospitals reporting that they offered a total of 10,044 internships (Table 1) On the basis of a questionnaire survey conducted early this year, it became evident that even this figure would be exceeded during the coming year In this survey, over a third of the hospitals conducting intern programs, indicated that they were increasing the number of internships they were offering to make up for the deficit in their house staffs resulting from residents being called into federal service On the basis of the information furnished by the hospitals in replying to this questionnaire, it is estimated that an additional 1,000 internships were to be offered for the coming year

Recognizing the serious problems resulting from this ever increasing disparity between the number of internships offered and the number of available applicants, the Council in June of this year revised its previous policy of approving a hospital for intern training which left the number of internships to be offered entirely to the discretion of the hospital In future, approval will be granted annually to include the specific number and type of internships for which the hospital is approved To implement this policy for this year, the Council announced a Quota Basis for the Appointment of

TABLE 2 —*Comparison of Number of Internships and Number of Vacancies, 1950-1951*

State	Number of Hospitals Approved 1950	Number of Hospitals Approved 1951	Number of Internships Offered 1950	Number of Internships Offered 1951	Number of Vacancies Reported 1950	Number of Vacancies Reported 1951	Percentage of Vacancies 1950	Percentage of Vacancies 1951
Alabama	5	5	68	96	34	35	50	36
Arizona	5	5	40	54	17	32	43	59
Arkansas	2	4	22	35	17	25	77	71
California	53	62	897	850	110	188	12	22
Colorado	11	12	111	129	28	34	25	19
Connecticut	16	20	179	191	35	61	20	32
Delaware	3	3	28	28	2	14	7	50
District of Columbia	12	11	197	175	29	37	15	21
Florida	*9*	*11*	*80*	*114*	*33*	*59*	*41*	*52*
Georgia	6	10	86	136	40	61	47	45
Idaho	0	0	0	0	0	0		
Illinois	62	62	702	778	98	176	14	23
Indiana	16	13	182	171	51	55	28	32
Iowa	11	9	81	81	22	30	27	37
Kansas	7	7	59	77	20	35	34	45
Kentucky	9	10	82	99	40	63	49	63
Louisiana	8	12	229	110	57	33	25	30
Maine	4	4	29	29	10	9	33	31
Maryland	20	20	321	195	79	70	25	36
Massachusetts	33	40	317	282	81	109	20	39
Michigan	31	35	387	493	115	184	30	37
Minnesota	15	16	184	196	44	59	24	30
Mississippi	2	2	16	16	16	16	100	100
Missouri	25	24	308	338	94	114	32	34
Montana	2	2	9	3	1	0	11	
Nebraska	9	9	63	79	16	37	25	47
Nevada	0	0	0	0	0	0		
New Hampshire	1	1	11	11	0	0		
New Jersey	35	34	303	343	93	94	31	27
New Mexico	0	0	0	0	0	0		
New York	110	112	1 464	1 771	224	393	15	22
North Carolina	9	11	122	136	27	50	22	37
North Dakota	4	4	20	9	11	7	55	78
Ohio	45	46	495	519	208	224	42	41
Oklahoma	6	7	53	91	25	24	47	26
Oregon	6	7	70	100	21	27	30	27
Pennsylvania	76	77	837	895	256	381	31	43
Rhode Island	6	6	47	48	6	10	13	21
South Carolina	5	7	60	71	7	18	12	25
South Dakota	3	3	21	18	14	5	67	28
Tennessee	13	15	203	183	61	63	30	34
Texas	25	26	297	408	93	180	31	44
Utah	6	7	54	75	19	35	35	47
Vermont	2	2	13	8	2	0	15	
Virginia	13	16	129	137	26	40	20	29
Washington	16	16	163	188	31	41	19	22
West Virginia	8	8	46	47	22	21	48	45
Wisconsin	23	25	180	184	73	79	41	43
Wyoming	0	0	0	0	0	0		
Totals *	789	828	9,370	10,044	2,340	3,223	30	32

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* Excludes territorial approved hospitals

Interns Under this program, each hospital conducting intern training was advised of approval for a definite number of internships for the year July 1, 1952-June 30, 1953 This number was based on a percentage of the internships offered in 1950 or the number offered in 1940, whichever was the larger The large majority of hospitals approved by the Council accepted the necessity of this program Since the announcement of the policy, however, approximately 15 per cent of the hospitals concerned have requested an increase in the number of their internships, in view of their expanded bed capacity, or additional activities, including those of an educational nature Further, there were a few hospitals, as was anticipated, which protested a quota basis of any sort The Council wished to give careful consideration to these requests and protests to avoid any inequities in the general application of its policy It felt also, that all other hospitals should be given an equal opportunity for a review of their status under the program It soon became apparent that time did not permit a considered evaluation of all these cases before the publication of this Internship and Residency Number Further, the approval of hospitals for a specific number of internships, directly effected the Matching Plan for internship appointments which is being sponsored by the National Interassociation Committee on Internships Again, it was recognized that it would be impossible to complete aciton on the requests for an increased number of internships in time to include the revised figure in the directory being published for the Matching Plan, a description of which is found in another section of this report In view of these considerations, the Council has deferred the quota program while strongly urging approved hospitals to cooperate on a voluntary basis in appointing interns for next year in accordance with the provisions of the quota plan

The number of internships included in the list of approved hospitals (p 388) represents the number of internships for which hospitals were approved under the quota basis, revisions in the original quota have been made for 78 hospitals whose requests could be evaluated prior to the publication of this list A number of other hospitals have requested increases in the number of internships for which they have been approved It is anticipated that action on these requests will be completed in the near future

INTERNSHIP VACANCIES

With the increase in the number of internships offered, there has been a parallel increase in the number of vacancies While last year vacancies reported represented 24 9 per cent of the total number offered, this year 32 0 per cent of available internships were reported unfilled (Table 2) Analysis of data on internship vacancies indicate that an appreciably higher percentage of vacancies existed in hospitals which were not affiliated with a medical school In these hospitals offering a total of 5,545 internships, there were 2,197 vacancies or 39 5 per cent, in the teaching hospitals, with 4,499 internships available, 1,026 or 22 8 per cent were not filled A further breakdown of these statistics reveal that the percentage of vacancies varies also with the size of the hospital, the smaller hospitals having a proportionately higher vacancy rate For example, hospitals of 150 beds or less reported unfilled, 239 of the 442 internships which they offered, a percentage of 52 9, on the other hand, hospitals having a bed capacity of 350 or over, reported that 1,151 of their 4,873 internships were not filled, representing 23 6 per cent of the total number available

As a group, the federal hospitals showed the lowest percentage of internship vacancies, 16 0 per cent, this

TABLE 3 —*Internships Offered by Type and Hospital Control*

		Number of Internships Offered								
				Straight						
Control	Number of Hospitals Approved	Rotating	Mixed	Med	Surgical	Ped	OB	Path	Total Straight	Total
U S Army	10	186								186
U S Navy	14	184								184
U S Public Health Service	11	116								116
Other Federal	2	28		2	1		1		4	32
Veterans Administration	9	75		26	27				53	128
Totals	46	589	—	29	28	—	1	—	57	646
City County	12	208	24	8		2		2	12	244
State	23	392	12	37	43	16	11	1	108	512
City	58	1 019	40	86	74	12	12	8	192	1,251
County	27	725	4	27	21	7			55	784
Totals	120	2,344	80	158	138	37	23	11	367	2 791
Church	315	2,646	4	56	29	1	5	8	94	2 744
Non Profit Association	334	2,893	101	219	155	39	29	22	464	3 458
Partnership	2	13								13
Corporation	11	59								59
Totals	662	5 611	105	275	184	40	34	25	558	6,274
Grand Totals	828	8,544	185	461	345	77	58	36	982	9 711 *

* Does not include 333 unclassified internships

figure excludes Veterans Administration hospitals, many of which reported vacancies on the basis of their anticipated requirements, these programs having been only recently approved Other governmental hospitals, excluding federal, reported 19 0 per cent of their internships vacant The fact that the majority of these hospitals are used for teaching purposes by medical schools *should be noted in considering their relatively low* vacancy rate In non-profit association hospitals, offering 35 9 per cent of the total number of internships, 31 9 per cent of the positions were unfilled last year Vacancies in church controlled hospitals were the highest of any group, with 45 6 per cent of the total number of internships in these hospitals reported unfilled.

It is evident, considering the fact that there were 3,223 internship vacancies in approved hospitals last year, that the present demand for interns cannot foreseeably be met The problems which have resulted from this increasing imbalance between the number of internships and the number of applicants have emphasized the need for a reclarification and redefinition of the internship and its present place in medical education To study these problems and to consider the whole question of the internship in its broadest aspects, the Council has recently appointed an Advisory Committee on Internships with representatives from the profession, medical education, the major clinical divisions and hospital administration Members of the committee include

Dr S Howard Armstrong,	Chicago
Dr Granville Bennett,	Chicago
Dr Ulrich Bryner,	Salt Lake City
Dr John Leonard,	Hartford
Dr John McK. Mitchell,	Philadelphia
Dr John Paine,	Buffalo
Dr John Romano,	Rochester, N Y
Dr Anthony J J Rourke,	San Francisco
Dr Robert Willson,	Philadelphia
Dr John Youmans,	Nashville
Dr Victor Johnson, Chairman	Rochester, Minn

The Committee has held its first meeting at which general objectives were reviewed and plans laid for the future conduct of the study

INTERNSHIPS BY TYPE OF SERVICE AND CONTROL

The Council approves three major types of internships, rotating, mixed, and straight This year, in preparing the list of internships by type of service, it was necessary to add a fourth category, so called special internships, *since a number of hospitals reported intern* training programs which could not properly be included in any of these three major classifications An analysis of internships offered last year by type of service and hospital control is given in Table 3 Federal hospitals offered a total of 646 internships, 589 of which were rotating, and 57 mixed In the other governmental hospitals, excluding the federal group, 2,791 internships were offered, of these 2,344 or 84 per cent were rotating, 80 or 3 per cent were mixed and 367 or 13 per cent were straight services Of the 6,274 offered in church, non-profit association, partnership and corporation hospitals, 5,611 representing 89 per cent of the total, were rotating in type, 105 or approximately 2 per cent were mixed, and 558, or 9 per cent, were straight, one service internships In addition, there were 333 internships which could not be classified as either rotating, mixed, or straight, in the lists of approved internships following this report (p 404), these internships are classified as special In all hospitals approved for intern training, the breakdown of internships by type of service shows that 85 4 per cent representing a total of 8,544 internships were rotating in type, 1 9 per cent or 185 internships were mixed, and 9 8 per cent, or 982 internships were straight services, an additional 333 internships were unclassified

TABLE 4 —*Summaries of Results of Trial Run of Matching Plan*

Hospital Rating of Applicant	Number Matched	Percentage	Cumulative Percentage
1	3,016	59	59
2	1,609	32	91
3	393	8	99
4	45	1	100
	5,063	100	

STIPENDS

Analysis of the data submitted by the hospitals relative to internship stipends indicate that there has been a further increase in salaries being offered This increase is greater in those hospitals which have no medical school affiliation While last year 63 hospitals (9 per cent) reported that they paid no salaries to the intern staff, this year there were 9 hospitals including 7 teaching hospitals which furnished only maintenance for the intern staff Sixty-two per cent of the teaching hospitals offered stipends of $62 per month or less this past year, 31 per cent paid salaries between $63-$137 per month and 7 per cent of these hospitals offered stipends in excess of $137 monthly Comparable figures for hospitals not affiliated with a medical school are as follows 24 per cent paid salaries of $62 per month or less, 58 per cent paid the intern staff between $63 and $137 monthly and the rest, representing 18 per cent of the total number, offered stipends of $138 per month or more

TABLE 5 —*Summaries of Results of Trial Run of Matching Plan*

Student Ranking of Hospital	Number Matched	Percentage	Cumulative Percentage
1	3,390	67	67
2	964	19	86
3	318	6	92
4	189	4	96
5	83	2	98
6	55	1	99
Below 6	64	1	100
	5,063	100	

There is a correlation in the data submitted by the hospitals between the salary scale and the size of the hospital In analyzing salaries in the range between $88 and $162 per month, it is found that while 65 per cent of the non-teaching hospitals with bed capacities of 150 or less offer stipends in this range, only 37 per cent of non-teaching hospitals of 350 beds or over, reported stipends of these amounts The correlation was even more apparent in the teaching hospitals In this group, 37 per cent of the hospitals of 150 beds or less, offered salaries between $88 and $162 monthly, in teaching hospitals of 350 bed capacity or larger, only 12 per cent gave their interns salaries within this range

No specific information regarding stipends paid by the federal services is presented in the list of approved services Interns appointed by the medical departments of the U S Army, Navy, Air Force and Public Health Service receive pay and allowances as established by government pay tables In Veterans Administration hospitals, salaries are based on levels prevailing in the area, as determined by the Veterans Administration in cooperation with the local Deans Committee Internships have been offered only in those Veterans Administration hospitals which are able to provide quarters for the intern staff on the hospital grounds

MATCHING PLAN FOR INTERNSHIP APPOINTMENT

During the past year, a trial run was made of a method of internship appointment in which students internship preferences were matched with the hospital's rating of the applicants This project was conducted by the National Interassociation Committee on Internships under the sponsorship of the Association of American Medical Colleges Although the run was begun late in the year and under simulated conditions, the results were such as to warrant the adoption of the Matching Plan[3] as the official method of internship appointments for the coming year

A description of the Matching Plan and a résume of the trial run this past year have been sent to all hospitals approved for intern training In the summary of the results of the trial run, it is pointed out that a successful matching occurred in 5,063 cases of the total number of 5,539 students who participated Under actual operating conditions, the number of students who would not be successfully matched will be extremely limited, most of the cases which were not matched in the trial run resulted from incomplete or inaccurate records received from either the applicant or the hospital These will be eliminated in the actual operation of the plan this year Tables 4 and 5 summarize the results of the matching of the 5,063 cases in the matched group Under the provisions of the plan, hospitals rated applicants in order of their preference or by groups as follows

Group 1	Includes those students most preferred by the hospital This group is limited to the number of appointments actually to be offered
Group 2	Includes those students desired by the hospital as alternates to Group 1 The number of students rated in this category is limited to twice the number of appointments to be offered
Group 3	Includes those students considered acceptable for appointment The number of applicants rated in this category is not limited
Group 4	Includes those students who are desired by the hospital if those in Groups 1-3 are not available Ordinarily, ratings in this group are necessary only in hospitals appointing a large number of interns
Group 5	Used by the hospital to designate students who will not be offered an appointment, were they to apply

The student in turn rated hospitals in the order of his preference as to appointment He listed all hospitals to which he presumably would apply It will be seen from the summaries that the large majority of students were matched with a hospital of first or second choice Obviously successful matching at this level will depend to some extent on the student's realistic appraisal of his opportunities for appointment In this regard, it is interesting to note that in this trial run, realizing that no actual appointments were being made, students were matched with hospitals of their first or second choice in 86 per cent of cases In only one per cent of the cases, was a student matched with a hospital which he had rated lower than sixth on his list The results so far as the hospitals were concerned, were equally as encouraging With 654 hospitals participating in the trial run, 91 per cent of the applicants who were successfully matched, were in the most desirable and alternate groups, 1 and 2, 8 per cent of the appointees were rated by the hospital as acceptable and only one per cent as acceptable only if other applicants were not available Considering that this was a trial run, the results exceeded the expectations of the Committee when the project was initiated and proved the feasibility of the plan

The Matching Plan is now being sponsored by the National Interassociation Committee on Internships and is the official plan for the appointment of interns this year This committee includes representatives from the following organizations Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges, the American Hospitals Association, the Catholic Hospital Association and the Protestant Hospital Association The medical departments of the federal services have liaison representatives on the committee, one of whom is elected as a voting member

The National Interassociation Committee on Internships has recently circularized all hospitals approved by the Council for intern training, as to their participation in the Matching Plan for appointments beginning next year A directory of approved internships will soon be distributed to all senior medical students with instructions concerning procedure in applying for internship appointment Students pay a service fee of $2 00 to the National Interassociation Committee when submitting an agreement to participate in the plan Participating hospitals pay a fee of $3 00 per intern appointed under the Matching Plan at the time appointments are made The hospital agrees to comply with the provisions of the plan in submitting its initial agreement

Internship appointments in U S Army, Navy, Air Force and Public Health Services hospitals are made through the offices of the Surgeon General Accordingly, students, under the Matching Plan, will list the federal services for which he is applying, in his preference list, rather than the federal hospitals to which he might desire to be assigned If matched with a federal service then, he may apply to the Surgeon General for a specific assignment In cases of Veterans Administration hospitals, however, since appointments are made locally, the student will list the particular hospital or hospitals to which he is applying, in his preference order

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It should be noted that the Matching Plan is a mechanism for facilitating the appointment of interns and it in no way interferes with a student's free selection of the hospital of his choice or with the hospitals preliminary negotiations with the student The student applies to the hospital in the usual way and to as many as he may desire He does agree, however, to accept appointment to the hospital with which he is matched according to his expressed preference The hospital is free to correspond with and interview all applicants in whom it is interested The hospital, like the student, agrees not to enter into any contractual relationship until after appointments have been made through the student-hospital matching procedure, and agrees further, that it will appoint those students on its list who are matched with the hospital under the provisions of the plan Policies regarding procedural matters are established by the National Interassociation Committee prior to the actual matching, to eliminate the necessity of interpretation in individual cases

The Council on Medical Education and Hospitals has approved the Matching Plan and is cooperating in implementing the plan for the appointment of interns this year It is of the opinion that all approved hospitals should give wholehearted support to the plan as a sound method of intern appointment which is fair and impartial to both the student and the hospital

Residencies

As of Sept 1, 1951, there were 1,120 hospitals conducting 4,368 residency programs approved by the Council Included are residencies in the following specialties and subspecialties

Medical
Dermatology-Syphilology
Internal Medicine
  Allergy
  Cardiovascular Diseases
  Gastroenterology
  Pulmonary Diseases
Neurology
Pediatrics
  Contagious Diseases
Physical Medicine
Psychiatry

Special
  General Practice
  Malignant Diseases
  Occupational Medicine
  Preventive Medicine Public Health

Surgical
Anesthesiology
General Surgery
Neurological Surgery
Obtetrics-Gynecology
Ophthalmology
Orthopedic Surgery
Otolaryngology
Plastic Surgery
Proctology
Thoracic Surgery
Urology

Laboratory Services
Pathology
Radiology

A résumé of the number of approved programs, the number of residencies offered and the number and percentage of vacancies, by specialties is contained in Table 6 The statistics regarding the number of approved hospitals and the number of residencies offered may differ in some specialties from those found in the lists of approved services since the table is based on data available Aug 1, 1951 while changes in the approved lists were made through September 1

Internal Medicine again leads all other specialties in the number of residencies available, with 3,873 residencies offered in 559 hospitals, this represents an increase over last year of 122 residencies and 31 additional hospitals approved In General Surgery, 474 hospitals offer a total of 3,698 residencies In addition, there are 1,075 appointments in 133 hospitals approved by the Council as offering satisfactory training in general surgery in preparation for the surgical specialties[4] Other specialties in which there are 1,000 or more residencies offered include psychiatry, 1,768, obstetrics-gynecology, 1,599, pathology, 1,108, and radiology, 1,075

For the first time, approved programs in preventive medicine and public health are included with 12 states and New York City sponsoring programs in this field Another change this year is the classification of orthopedic surgery services into three categories fully approved three year programs, which include training in adult orthopedics, children's orthopedics, fractures and the basic science aspects of the specialty, three year programs which include all the above divisions with the exception of children's orthopedics, and a third category which includes those hospitals offering partial training in one or more but not all divisions of the specialty The lists of these services were developed in collaboration with the American Board of Orthopedic Surgery This type of listing will enable prospective residents to refer more readily to those programs which best fit their individual training requirements It also serves to simplify the evaluation of the resident's training In the list of approved residencies, the number of first year appointments is given, as well as the total number of residencies offered

RESIDENCY VACANCIES

Table 6, as previously noted, also includes information on the number and percentage of residency vacancies Hospitals approved for residency training reported a total of 4,869 vacancies as of Jan 1, 1951 This number has undoubtedly increased since the first of the year, with the entrance into military service of residents serving at that time Last year, there were only 1,179 positions reported vacant, representing approximately 6 per cent of the total number offered The figure this year reveals that twenty-five per cent of all residency appointments were unfilled This reflects the fact, not only that residents have been called for military duty before completing their training, but also, and perhaps of more significance, that, to an increasingly greater extent, hospitals are having to rely on the intern class to fill their residency positions The number of applicants seeking residencies, aside from the intern group, is unquestionably decreasing It can be anticipated that this trend will continue at least until such time as interns and residents now entering military service are released

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The greatest percentage of vacancies occurred in the following fields physical medicine, 58 per cent, malignant diseases, 50 per cent, cardiovascular diseases, 47 per cent, pulmonary diseases, 45 per cent, contagious diseases, 45 per cent and surgical programs in preparation for the specialties, 45 per cent The relatively high percentage of vacancies in this latter category can be partially accounted for by the fact that approval for this type of program has been introduced relatively recently In point of numbers, internal medicine was the highest with 924 vacancies reported There were 642 surgical residencies unfilled, 534 vacant positions in psychiatry and 430 in pathology The number of vacancies in obstetrics-gynecology have increased sharply, while last year there were only 30 positions reported unfilled, this year, 333 residencies in this specialty were vacant as of Jan 1st last Of the specialties in the major clinical divisions, pediatrics showed the fewest number and lowest percentage of vacancies with 185 residencies unfilled, representing approximately 15 per cent of the total number offered

While it has been reported that there has been an increasing interest in general practice among medical students, the number preparing for this type of practice by taking a general practice residency has not been great Last year, of the 224 positions available, 57 or 25 per cent were vacant A number of these programs were approved during the past year however, and vacancies as of Jan 1, accordingly, were to be expected Undoubtedly, a number of physicians enter general practice directly from the internships, others take one or more years of training in a specialty, such as internal medicine, surgery, obstetrics-gynecology or pediatrics Since residencies in general practice were only introduced within the past two years, it is not possible to make significant comparisons relative to the number of residents in these training programs nor to the number of vacancies

It is apparent from a review of the data presented in Table 6, that the situation which obtained in the postwar period, when the number of applicants exceeded the number of available appointments, has now been completely reversed in all specialties While the rapid expansion of the residency program during the past several years has leveled off, the number of residencies presently available presents a problem which will require thoughtful study and consideration

TABLE 6—*Internship Hospitals with Highest Autopsy Rates*

FEDERAL			NONFEDERAL	
1.	Brooke Army Medical Center San Antonio Texas	99	1	Children's Hospital Los Angeles Calif	93
2.	Veterans Admin Hospital Salt Lake City Utah	98	2	Beverly Hospital Beverly Mass	93
3	Veterans Admin Hospital Long Beach Calif	93	3	University of Nebraska Hospital Omaha Neb	91
4	Fitzsimons Army Hospital Denver Colo	91	4	Milwaukee Hospital Milwaukee Wis	91
5	Murphy Army Hospital Waltham Mass	90	5	Hartford Hospital Hartford Conn	87
6	Veterans Admin Hospital Houston Texas	90	6	Ravenswood Hospital Chicago Ill	87
7	U S Naval Hospital Jacksonville Fla	89	7	Research and Educational Hospitals Chicago, Ill	85
8	William Beaumont Army Hospital El Paso Texas	89	8	Collis P and Howard Huntington Memorial Hospital Pasadena Calif	84
9	U S Public Health Service Hospital San Francisco, Calif	88	9	Colorado General Hospital Denver Colo	83
10	Letterman Army Hospital San Francisco Calif	88	10	Children's Hospital Medical Center Boston Mass	83
11.	U S Naval Hospital Great Lakes Ill	88	11	University of California Hospital San Francisco Calif	82
12.	U S Public Health Service Hospital Galveston Texas	87	12	Saginaw General Hospital Saginaw Mich	82
13	U S Naval Hospital Bremerton Wash	87	13	Evanston Hospital, Evanston Ill.	81
14	Valley Forge Army Hospital Phoenixville Pa	86	14	Lutheran Hospital Baltimore Md	81
15	U S Naval Hospital San Diego Calif	85	15	Mary Hitchcock Memorial Hospital Hanover N H	81
16	U S Public Health Service Hospital Detroit, Mich	83	16	Ohio State University Hospital Columbus Ohio	81
17	Veterans Admin Hospital McKinney, Texas	81	17	Pennsylvania Hospital, Philadelphia Pa	81
18	U S Public Health Service Hospital Baltimore, Md.	80	18	St Luke's Hospital Chicago Ill	79
19	U S Naval Hospital Portsmouth Va	80	19	University of Minnesota Hospitals Minneapolis Minn	79
20	U S Public Health Service Hospital Stapleton, N Y	70	20	Peter Bent Brigham Hospital Boston Mass	78

TABLE 7—*Residencies Offered and Number of Vacancies by Specialty—1951*

Specialty	Number of Approved Programs	Total Number of Residencies Offered	Number of Vacancies	Vacancy Percentage
Allergy	12	16	6	38
Anesthesiology	204	725	201	28
Cardiovascular Disease	25	58	27	47
Contagious Disease	14	58	26	45
Dermatology and Syphilology	85	221	51	23
Gastroenterology	9	14	3	21
General Practice	66	224	127	57
Internal Medicine	559	3,873	924	24
Malignant Diseases	18	48	24	50
Neurological Surgery	92	206	48	23
Neurology	80	216	85	39
Obstetrics and Gynecology	381	1,599	333	21
Occupational Medicine	1	2	1	50
Ophthalmology	172	551	114	21
Orthopedic Surgery	260	901	186	21
Otolaryngology	152	408	135	33
Pathology	438	1 108	430	39
Pediatrics	242	1,258	185	15
Physical Medicine	43	79	46	58
Plastic Surgery	25	48	16	33
Proctology	12	14	2	14
Psychiatry	232	1 708	534	30
Pulmonary Diseases	110	384	171	45
Radiology	365	1 075	298	28
Surgery *	133	266	110	41
Surgery †	474	3 698	642	17
Thoracic Surgery	45	110	26	24
Urology	213	536	118	22
Totals	4 462	19,364	4 869	25

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* Programs approved by the Council as offering training in general surgery in preparation for residencies in the surgical specialties

† Includes 74 residencies in 29 hospitals offering training integrated with or contributory to a fully approved program

APPROVED INTERNSHIPS

Council on Medical Education and Hospitals of the American Medical Association
535 North Dearborn Street, Chicago 10

Revised to September 1, 1951

HOSPITALS, 844 INTERNSHIPS, 9,278

The following general hospitals, investigated and approved by the Council on Medical Education and Hospitals, are considered in position to furnish acceptable intern training in accordance with standards adopted by the American Medical Association Three types of internships are approved by the Council—*rotating, mixed* and *straight*

1 A rotating internship is defined as one which provides supervised experience in internal medicine, surgery, pediatrics, obstetrics and their related subspecialties, together with experience in laboratory and radiologic diagnosis

2 A mixed internship is defined as one which provides supervised experience in two or more, but not in all, of the clinical divisions named

3 A straight internship is defined as one which provides supervised experience in a single department, although it may include limited opportunity for work in a related subspecialty Straight internships are now approved in internal medicine, surgery, pediatrics, obstetrics (with or without gynecology) and pathology

The number of internships listed for each hospital is that established under the Quota Basis for the Appointment of Interns A number of these hospitals have requested a revision in the number of internships for which the hospital is approved Action on these requests will be completed on or before October 15 The program has presently been placed on a voluntary participation basis. Hospitals are strongly urged, however, to co-operate under the provisions of the program, in the appointment of interns for the year 1952-1953

Hospitals approved for internships that are used by medical schools for undergraduate clinical clerkships on inpatient services have been identified in the following lists by the symbols **X** and **x** Hospitals have been identified with symbol **X** when a medical school *has indicated that the hospital is a major unit in the school's teaching program* Hospitals have been identified with the symbol **x** when a medical school has indicated that the hospital is used to a limited extent in the school's teaching program Certain internships in hospitals designated as teaching hospitals may not provide for assignments to teaching services Other internships may provide for only a portion of the internship period being spent on teaching services Prospective interns desiring specific information concerning internship assignments to teaching services in a hospital are advised to communicate with the dean of the medical school with which the hospital is affiliated Medical school affiliations are indicated by footnotes 10 to 83 placed immediately after the symbol **X** or **x** The list of medical schools appears on page 398 The plus (+) sign indicates additional approval for residencies in specialties, as shown in the Council s list of Approved Residencies and Fellowships

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Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
UNITED STATES ARMY											
Army and Navy General Hospital +[1]	Hot Springs Natl Pk Ark	Fed	451	3 690	R	12	Total 195	No	Req	53	
Letterman Army Hospital +[3]	San Francisco Calif	Fed	2,307	15 354	R	12		No	None	88	
Fitzsimons Army Hospital +[3] x16	Denver Colo	Fed	2 500	15 598	R	12		No	None	91	
Army Medical Center +[3]-x18-19	Washington	Fed	1 700	13 509	R	12		No	Req	87	
Murphy Army Hospital	Waltham Mass	Fed	715	8,275	R	12		No	Req	90	
Percy Jones Army Hospital	Battle Creek Mich	Fed	1 600	9 911	R	12		No	Req	78	
Valley Forge Army Hospital	Phoenixville Pa	Fed	1 800	1 842	R	12		No	Req	86	
William Beaumont Army Hospital	El Paso Tex	Fed	1 500	9 878	R	12		No	Req	89	
Brooke Army Hospital +[3]	San Antonio Tex	Fed	2 400	21 417	R	12		No	None	99	
Madigan Army Hospital +	Fort Lewis Wash	Fed	1 784	11 871	R	12		No	Req	77	
Gorgas Hospital +	Ancon Canal Zone		712	8 769	R	12		No	Req	53	
Tripler Army Hospital +	Moanalua Honolulu Hawaii	Fed	1 500	15 590	R	12		No	None	87	
UNITED STATES NAVY											
U S Naval Hospital [1]	Mare Island Calif	Fed					Total 208				
U S Naval Hospital +[1] [3]	Oakland Calif	Fed	1 900	17 741	R	12		No	Req	79	
U S Naval Hospital	Oceanside Calif	Fed	900	7 051	R	12		No	Req	63	
U S Naval Hospital +[1]	San Diego, Calif	Fed	1 800	20 965	R	12		No	Req	85	
U S Naval Hospital	Jacksonville, Fla	Fed	725	2 079	R	12		No	Req	89	
U S Naval Hospital +[1]	Pensacola Fla	Fed	450	6 416	R	12		No	Req	53	
U S Naval Hospital +[1] [3]	Great Lakes Ill	Fed	1 400	10 152	R	12		No	Req	83	
U S Naval Hospital +[1] x18	Bethesda Md	Fed	1 400	13 992	R	12		No	Req	76	
U S Naval Hospital +[1]	Chelsea Mass	Fed	825	6 849	R	12		No	Req	53	
U S Naval Hospital +[1] [3]	St. Albans, N Y	Fed	2,200	9 528	R	12		No	Req	61	
U S. Naval Hospital +[3]-x68	Philadelphia, Pa	Fed	1 840	15 329	R	12		No	Req	74	
U S Naval Hospital [1]	Newport R.I.	Fed	650	5 932	R	12		No	None	71	
U S Naval Hospital	Charleston, S C	Fed	600	6 199	R	12		No	Req	79	
U S Naval Hospital +[3]	Portsmouth, Va	Fed	1 658	15 455	R	12		No	Req	80	
U S Naval Hospital	Bremerton Wash	Fed	500	4 970	R	12		No	Req	87	
UNITED STATES PUBLIC HEALTH SERVICE											
U S Public Health Service Hospital +[1] [3]	San Francisco Calif	Fed	485	5 453	R	12	Total 122	(130)	Req	83	
U S Public Health Service Hospital +[1] [3]	Chicago, Ill	Fed	204	2 300	R	12		(103)	Req	67	
U S Public Health Service Hospital +[1] [3]	New Orleans, La	Fed	436	5 651	R	12		No	Req	73	
U S Public Health Service Hospital +[1] [3]	Baltimore Md	Fed	526	6 561	R	12		No	Req	80	
U S Public Health Service Hospital +[1] [3]	Boston Mass	Fed	340	4 007	R	12		(113)	None	63	
U S Public Health Service Hospital +[1]	Detroit, Mich	Fed	250	2,315	R	12		(172)	Req	83	
U S Public Health Service Hospital +[1] [3]	Stapleton, S I., N Y	Fed	860	9 384	R	12		(214)	Req	70	
U S Public Health Service Hospital +[3]	Cleveland Ohio	Fed	258	2 509	R	12		(221)	Req	74	
U S Public Health Service Hospital [1] x78	Galveston, Tex	Fed	200	2 682	R	12		(250)	Req	87	
U S Public Health Service Hospital [1] [3]	Norfolk Va	Fed	316	4 720	R	12		(256)	Req	75	
U S Public Health Service Hospital +[1] [3] x61	Seattle Wash	Fed	499	5 320	R	12		(260)	Req	73	
FEDERAL SECURITY AGENCY											
Freedmen s Hospital +[1] [3]-X20	Washington D C	Fed	483	8 995	R-S	12	16	No	None	63	
St. Elizabeth s Hospital +[1] [3]-x18-X19	Washington D C	Fed	6 590	1 648	R	12	12	(141)	Req	70	
VETERANS ADMINISTRATION											
Veterans Admin. Hospital [1]	Little Rock Ark	Fed	320	1 056	R	12	4	No	None	85	
Veterans Admin Hospital +[1]	Long Beach, Calif	Fed	1 600	15 064	R	12	32	(147)	None	93	
Veterans Admin. Hospital +[1]	Los Angeles Calif	Fed	1 449	22 762	S	12	29	No	Req	85	
Veterans Admin Hospital +[3]-x17	Newington, Conn	Fed	341	4 282	S	12	13	No	None	82	
Veterans Admin Hospital+[1]	Chamblee Ga	Fed	631	11 893	S	12	8	(209)	None	73	
Veterans Admin. Hospital +[1] X62	Oklahoma City Okla	Fed	220	3 347	R	12	4	(227)	Req	59	
Veterans Admin. Hospital +[1] x74	Nashville Tenn	Fed	600	7 557	S	12	11	(248)	None	69	
Veterans Admin Hospital +[1] X77	Houston, Tex	Fed	746	6 134	R	12	25	(251)	Req	90	
Veterans Admin Hospital +[1] x75	McKinney Tex	Fed	619	6,293	S	12	22	No	None	81	
Veterans Admin Hospital + X78	Salt Lake City Utah	Fed	204	2 886	S	12	6	(254)	Req	93	
Veterans Admin Hospital +[1] x80	Richmond Va	Fed	1 100	6 911	S	12	10	No	None	51	

Abbreviations and other references will be found on pages 398 and 399

Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
NONFEDERAL											
ALABAMA											
Carraway Methodist Hospital +[1]	Birmingham	Church	225	7 981	R	12	6	No	Req	45	100
Jefferson Hillman Hospital +[1] 1-X10	Birmingham	State	592	18 789	RMS	12	25	No	Req	49	25
Lloyd Noland Hospital +	Fairfield	NPAssn	300	8,354	R	12	12	No	Req	42	75
Holy Name of Jesus Hospital [1]	Gadsden	Church	120	6 463	R	12	2	No	Req	24	75
City Hospital +	Mobile	CyCo	300	8 186	R	12	12	No	Req	52	150
ARIZONA											
Good Samaritan Hospital*[1]	Phoenix	Church	210	9 958	R	12	9	(100)	Req	36	125
Memorial Hospital +[1]	Phoenix	NPAssn	230	7 761	R	12	8	(118)	Req	44	150
St Joseph s Hospital +[1]	Phoenix	Church	192	9,598	R	12	6	(118)	None	48	125
St. Mary s Hospital and Sanatorium +[1]	Tucson	Church	216	9 152	R	12	3	(119)	Req	47	100
Tucson Medical Center +[1]	Tucson	NPAssn	242	6,230	R	12	7	(120)	None	44	100
ARKANSAS											
Arkansas Baptist Hospital +[1]	Little Rock	Church	271	11 355	R	12	10	No	None	28	125
St. Vincent s Infirmary +[1]	Little Rock	Church	200	8 947	R	12	9	(101)	Req	28	125
University Hospital +[1] X11	Little Rock	State	204	5,337	R	12	8	No	Req	59	75
CALIFORNIA											
Herrick Memorial Hospital +[1]	Berkeley	NPAssn	190	7 849	R	12	4	No	Req	71	35
San Joaquin General Hospital +[1]	French Camp	County	697	8,229	R	12	10	No	Req	52	135
Fresno County General Hospital +[1] [3]	Fresno	County	639	10 037	R	12	13	No	Req	36	120
Glendale Sanitarium and Hospital +[1]	Glendale	Church	225	8 163	R	12	6	No	Req	52	178
Loma Linda Sanitarium and Hospital +[1] x13	Loma Linda	Church	166	4 751	R	12	5	No	Req	65	114
Long Beach Community Hospital [1]	Long Beach	NPAssn	150	7 214	R	12	3	(121)	Req	19	50
Saint Mary s Long Beach Hospital	Long Beach	Church	250	9 865	R	12	5	No	None	25	50
Seaside Memorial Hospital +[1]	Long Beach	NPAssn	370	14 197	R	12	8	(102)	Req	40	50
California Hospital +[1]	Los Angeles	Church	317	14 511	R	12	13	(123)	Req	48	75
Cedars of Lebanon Hospital +[1]	Los Angeles	NPAssn	310	12,276	R	12	12	(122)	Req	53	60
Childrens Hospital +[1] x14	Los Angeles	NPAssn	201	7 235	S	12	2	No	Req	93	40
Hospital of the Good Samaritan +[1]	Los Angeles	Church	400	12 949	R	12	14	(124)	Req	43	90
Los Angeles County Hospital +[1] 1-X13-14	Los Angeles	County	3 122	70,337	R	12	124	No	Req	55	60
Methodist Hospital +[1]	Los Angeles	Church	206	8 479	R	12	10	No	Req	27	75
Presbyterian Hospital-Olmsted Memorial +[1]	Los Angeles	Church	300	11 546	R-S	12	9	(125)	Req	38	60
Queen of Angels Hospital +[1]	Los Angeles	Church	502	18 891	R	12	20	No	Req	49	75
St. Vincent s Hospital +	Los Angeles	Church	230	9,547	M	12	6	No	None	48	60
Santa Fe Coast Lines Hospital +	Los Angeles	NPAssn	195	4 112	R	12	6	(126)	Req	55	90
White Memorial Hospital +[1] X13	Los Angeles	Church	207	8 922	R	12	16	No	Req	57	112
Highland Alameda County Hospital +[1] [3]	Oakland	County	486	11 787	R	12	18	(127)	Req	40	75
Permanente Foundation Hospital +[1]	Oakland	NPAssn	315	11 143	R	12	7	No	None	70	75
Orange County General Hospital [1]	Orange	County	450	4,587	R	12	12	No	Req	55	154
Collis P and Howard Huntington Memorial Hosp +[1]	Pasadena	NPAssn	243	10 737	R	12	6	(128)	Req	84	117 50
St. Luke Hospital [1]	Pasadena	Church	170	8,510	R	12	3	No	None	48	75
Sacramento County Hospital [1]	Sacramento	County	470	11 171	R	12	18	No	Req	54	120
San Bernardino County Charity Hospital + x13	San Bernardino	County	344	6 084	R	12	11	No	Req	55	110
Mercy Hospital +[1]	San Diego	Church	332	13 787	R	12	6	No	Req	40	55
San Diego County General Hospital +[1]	San Diego	County	1 047	8 609	R	12	14	No	Req	40	65
Children s Hospital +[1] x12	San Francisco	NPAssn	250	8,083	R	12	6	No	Req	63	35
Franklin Hospital +[1] x12	San Francisco	NPAssn	250	8 339	R	12	8	No	None	65	35
French Hospital +[1]	San Francisco	NPAssn	225	7 102	R	12	7	No	Req	39	50
Mary s Help Hospital +[1]	San Francisco	Church	183	7,277	R	12	5	No	Req	40	75
Mount Zion Hospital +[1] [3]	San Francisco	NPAssn	188	6 112	R	12	15	No	Req	65	50
St. Joseph s Hospital +[1]	San Francisco	Church	238	7,544	R	12	6	No	Req	31	50
St Luke s Hospital +[1]	San Francisco	Church	229	8 384	R	12	4	No	Req	44	75
St. Mary s Hospital +[1]	San Francisco	Church	371	11 451	R	12	10	No	Req	54	50
San Francisco Hospital +[1] 1-X12 15	San Francisco	CyCo	1 101	22 993	R	12	52	No	Req	36	110
Southern Pacific General Hospital +[1]	San Francisco	NPAssn	450	7 478	R	12	15	(129)	Req	62	100
Stanford University Hospitals +[1] X15	San Francisco	NPAssn	356	11,206	S	12	15	No	Req	57	25
University of California Hospital +[1] X12	San Francisco	State	286	8 443	S	12	21	(131)	Req	82	25
Santa Clara County Hospital +[1]	San Jose	County	468	6 551	R	12	8	No	Req	72	95
Santa Barbara Cottage Hospital +[1]	Santa Barbara	NPAssn	210	6 619	R	12	15	(132)	Req	59	60
St John s Hospital +	Santa Monica	Church	108	6 474	R	12	4	No	Req	54	50
Santa Monica Hospital +[1]	Santa Monica	Church	178	9 928	R	12	8	(133)	Req	40	50
Harbor General Hospital +[1]	Torrance	County	873	7,599	R	12	18	No	None	73	60
COLORADO											
Glockner Penrose Hospital +[1]	Colorado Springs	Church	220	5 004	R	12	4	No	Req	53	50
General Rose Memorial Hospital [1]	Denver	NPAssn	244	11 561	R	12	6	(134)	None	40	50
Mercy Hospital +[1]	Denver	Church	250	9 861	R	12	7	No	None	49	30
Porter Sanitarium and Hospital [1]	Denver	Church	140	5 778	R	12	7	(135)	Req	48	162
Presbyterian Hospital +[1] x16	Denver	Church	160	7 634	R	12	5	No	Req	59	55
St. Anthony Hospital +[1]	Denver	Church	235	9 172	R	12	10	No	Req	44	50
St Joseph s Hospital +[1]	Denver	Church	838	12 764	R	12	6	No	Req	36	50
St. Luke s Hospital +[1]	Denver	Church	280	11,351	R	12	9	(103)	None	52	50
University of Colorado Medical Center											
Colorado General Hospital +[1] X16	Denver	State	272	5,552	R	12	12	No	Req	83	30
Denver General Hospital +[1] X16	Denver	CyCo	467	7 814	R	12	16	No	Req	72	30
Corwin Hospital +[1]	Pueblo	Church	206	6,339	R	12	4	No	None	51	50
CONNECTICUT											
Bridgeport Hospital +[1]	Bridgeport	NPAssn	400	10 800	R	12	10	No	Req	45	100
St. Vincent s Hospital +[1]	Bridgeport	Church	345	12,374	R	12	8	(136)	Req	30	100
Danbury Hospital	Danbury	NPAssn	168	5 424	R	12	5	No	None	46	100
Greenwich Hospital [1]	Greenwich	NPAssn	128	4 475	R	12	5	No	Req	63	75
Hartford Hospital +[1] [3]	Hartford	NPAssn	810	27 487	R	24	24	No	Req	87	
J J McCook Memorial Hospital [1]	Hartford	City	265	4 139	R	12	4	No	Req	57	120
St Francis Hospital +[1] [3]	Hartford	Church	535	18 752	R	12	14	(137)	Req	32	35
Meriden Hospital [1]	Meriden	NPAssn	121	5 696	R	12	4	No	None	41	100
Middlesex Hospital +[1] x17	Middletown	NPAssn	150	6 330	R	12	4	No	None	46	50
New Britain General Hospital +[1]	New Britain	NPAssn	267	10 075	R	12	6	No	Req	68	75
Grace-New Haven Community Hospital											
Grace Unit +[1]	New Haven	NPAssn	163	5 836	R	24	8	No	Req	37	25
New Haven Unit (University Service) +[1] 1-X17	New Haven	NPAssn	542	12 501	S	12	35	(138)	Req	48	
Hospital of St Raphael +[1]	New Haven	Church	370	9 538	R	12	11	No	Req	21	50
Lawrence and Memorial Associated Hospitals +[1]	New London	NPAssn	233	6 985	R	12	4	No	None	17	100
Norwalk Hospital +[1]	Norwalk	NPAssn	247	8 785	R	12	5	No	Req	43	130
William W Backus Hospital	Norwich	NPAssn	138	5 068	R	12	3	No	Req	25	150
Stamford Hospital +[1]	Stamford	NPAssn	232	7 694	R	12	9	No	Req	56	150
St Mary s Hospital +[1] [3]	Waterbury	Church	327	12,272	R	12	6	No	Req	31	100
Waterbury Hospital +[1] [3]	Waterbury	NPAssn	324	13 453	R	12	7	No	Req	58	75

Abbreviations and other references will be found on pages 398 and 399

Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
DELAWARE											
Delaware Hospital +1-3	Wilmington	NPAssn	377	11 157	R	12	11	No	Req	56	100
Memorial Hospital +1 X64	Wilmington	NPAssn	210	5 773	R	12	4	No	Req	63	100
Wilmington General Hospital +1	Wilmington	NPAssn	184	5 742	R	12	6	No	Req	46	100
DISTRICT OF COLUMBIA											
Central Dispensary and Emergency Hospital +1-3-x18	Washington	NPAssn	300	7,274	R	12	13	(139)	Req	49	50
Doctors Hospital +1	Washington	Corp	237	9 598	R	12	6	(104)	None	65	50
Gallinger Municipal Hospital +1 3-X18-19-x20	Washington	City	1 416	23 716	R	12	50	No	Req	44	75
Garfield Memorial Hospital +1	Washington	NPAssn	302	9 974	R	12	12	No	Req	62	50
Georgetown University Hospital +1 3 X18	Washington	Church	361	10,892	S	12	9	(140)	Req	61	25
George Washington University Hospital +1 3 X19	Washington	NPAssn	405	13,561	S	12	17	No	Req	63	105
Providence Hospital +1 x18	Washington	Church	288	10 768	R	12	12	No	Req	61	50
Sibley Memorial Hospital +1	Washington	Church	256	10 932	R	12	9	No	None	55	50
Washington Sanitarium and Hospital 1 x18	Washington	Church	226	5 431	R	12	4	No	Req	38	130
FLORIDA											
Duval Medical Center +	Jacksonville	County	330	7 615	R	12	10	No	Req	57	15
St. Luke's Hospital +	Jacksonville	NPAssn	180	7 886	R	12	4	No	None	41	100
St. Vincent's Hospital +1	Jacksonville	Church	239	11 249	R	12	9	No	Req	52	100
Jackson Memorial Hospital +1 3	Miami Beach	County	509	18,237	R	12	32	No	Req	51	31 50
Mount Sinai Hospital 1	Miami Beach	NPAssn	258	6 664	R	12	6	No	Req	35	150
St. Francis Hospital	Miami Beach	Church	175	4 478	R	12	4	No	Req	19	75
Orange Memorial Hospital +1	Orlando	NPAssn	212	8 039	R	12	9	No	Req	41	100
Sacred Heart Hospital	Pensacola	Church	160	6 141	R	12	3	No	None	39	50
Tampa Municipal Hospital +1	Tampa	City	300	11 035	R	12	8	No	Req	24	75
GEORGIA											
St Mary's Hospital 1	Athens	Church	102	5,286	R	12	3	No	Req	21	150
Crawford W Long Memorial Hospital +1	Atlanta	NPAssn	481	22,218	R	12	16	(142)	Req	44	50
Georgia Baptist Hospital +1	Atlanta	Church	209	8 023	R	12	14	No	Req	37	125
Grady Memorial Hospital +1 3-X21	Atlanta	Counties	610	17 067	S	12	40	No	Req	50	10
Piedmont Hospital +1	Atlanta	NPAssn	132	6 043	R	12	5	No	None	49	75
St Joseph's Infirmary +1	Atlanta	Church	150	7 029	R	12	5	(142)	Req	38	150
University Hospital +1 X22	Augusta	City	456	16 515	R	12	13	No	Req	31	20
Columbus City Hospital 1	Columbus	City	260	10,206	R	12	8	No	Req	23	200
Emory University Hospital +1 x21	Emory University	NPAssn	283	10,541	S	12	8	(105)	None	57	25
Macon General Hospital 1	Macon	*CyCo*	264	13 397	R	12	8	(143)	Req	24	100
ILLINOIS											
MacNeal Memorial Hospital +1	Berwyn	NPAssn	165	8,596	R	12	4	No	Req	39	100
Alexian Brothers Hospital +	Chicago	Church	251	6 022	R	12	7	(106)	None	41	125
American Hospital +1	Chicago	NPAssn	152	5,530	R	12	4	No	Req	40	25
Augustana Hospital +1	Chicago	Church	275	9 447	R	12	10	No	Req	54	50
Chicago Memorial Hospital +1	Chicago	NPAssn	92	2 638	R	12	5	(144)	Req	76	150
Columbus Hospital	Chicago	Church	450	5 322	R	12	16	No	None	62	75
Cook County Hospital +1 3-X23 24-26-27	Chicago	*County*	3,200	69 300	R	24	100	No	Req	21	15
Edgewater Hospital 1	Chicago	NPAssn	144	7 907	R	12	6	No	None	44	100
Englewood Hospital +	Chicago	NPAssn	160	6 403	R	12	6	No	None	32	100
Evangelical Hospital 1	Chicago	Church	195	8 113	R	12	7	No	None	[illegible]	150
Garfield Park Community Hospital 1	Chicago	NPAssn	150	8 019	R	12	6	No	None	33	175
Grant Hospital +1	Chicago	NPAssn	236	7 224	R	12	9	No	Req	56	100
Henrotin Hospital +1	Chicago	NPAssn	100	3 427	R	12	4	No	Req	53	75
Holy Cross Hospital 1	Chicago	Church	143	6 356	R	12	5	No	None	67	100
Hospital of St. Anthony de Padua +1	Chicago	Church	217	7 812	R	12	9	No	None	34	100
Illinois Central Hospital +1 x26	Chicago	NPAssn	260	6 393	R	12	9	(145)	Req	42	131.25
Illinois Masonic Hospital +1	Chicago	NPAssn	225	8 369	R	12	7	No	Req	54	25
Jackson Park Hospital 1	Chicago	Corp	146	5 509	R	12	6	No	None	38	150
Loyola University Hospital Group											
Loretto Hospital +1-X27	Chicago	Church	139	5,226	R	12	6	(146)	None	72	75
Lutheran Deaconess Home and Hospital +	Chicago	Church	193	7,268	R	12	5	No	None	45	50
Mercy Hospital *1 X27	Chicago	Church	357	9 420	R	12	12	No	Req	47	25
Michael Reese Hospital +1	Chicago	NPAssn	645	17,639	R	12	40	(107)	Req	72	15
Mother Cabrini Memorial Hospital 1	Chicago	Church	129	6 701	R	12	5	No	None	42	100
Mount Sinai Hospital +1 X23	Chicago	NPAssn	285	10 189	R-S	12	17	(148)	OP	43	15
Norwegian American Hospital +1	Chicago	NPAssn	175	5 947	R	12	6	No	None	40	100
Passavant Memorial Hospital +1 X24	Chicago	NPAssn	260	8 726	R	12	11	(149)	None	66	
Presbyterian Hospital +1-X26	Chicago	NPAssn	450	12 820	R	12	30	No	None	63	
Provident Hospital +1	Chicago	NPAssn	180	7 417	R	12	8	No	Req	50	35
Ravenswood Hospital +1	Chicago	NPAssn	207	7 741	R	12	6	No	Req	87	70
Research and Educational Hospitals +1 3-X26	Chicago	State	422	6 442	R	12	34	No	Req	85	15
Roseland Community Hospital	Chicago	NPAssn	102	3 764	R	12	4	No	None	25	175
St. Anne's Hospital +1	Chicago	Church	320	11,318	R	12	10	No	None	40	100
St. Bernard's Hospital +	Chicago	Church	189	8 764	R-S	12	6	No	None	37	100
St Elisabeth Hospital +1	Chicago	Church	324	10 189	R	12	6	No	None	34	100
St. Joseph Hospital +1 x24	Chicago	Church	197	6 125	R	12	6	No	Req	52	100
St. Luke's Hospital +1 X24-x26	Chicago	NPAssn	579	17,383	R	12	24	No	Req	79	
St. Mary of Nazareth Hospital +	Chicago	Church	263	9 433	R	12	6	No	Req	39	150
South Chicago Community *Hospital 1*	Chicago	NPAssn	235	9 171	R	12	6	No	Req	30	150
Swedish Covenant Hospital +1	Chicago	Church	193	6 484	R	12	7	No	Req	30	100
University of Chicago Clinics +1 3-X25	Chicago	NPAssn	650	13,213	R-S	12	24	No	Req	77	
Walther Memorial Hospital 1	Chicago	Church	175	6 143	R	12	6	No	Req	51	100
Wesley Memorial Hospital +1-X24	Chicago	Church	571	15 764	R1	12	22	(150)	None	63	
Women and Children's Hospital +2	Chicago	NPAssn	115	3 478	R	12	4	No	Req	53	50
Woodlawn Hospital +1	Chicago	NPAssn	125	4 028	R	12	4	No	Req	57	100
St Mary's Hospital	East St Louis	Church	290	7 413	R	12	6	No	None	38	150
Memorial Hospital 1	Elmhurst	NPAssn	185	7 762	R	12	6	No	None	47	125
Evanston Hospital +1 X24	Evanston	NPAssn	339	8 551	R	12	18	(151)	Req	81	
St. Francis Hospital +1	Evanston	Church	366	12 626	R	12	12	No	None	47	125
Little Company of Mary Hospital +1	Evergreen Park	Church	350	15 606	R	12	8	No	None	24	100
St Joseph's Hospital +	Joliet	Church	300	9 509	R	12	5	No	None	27	100
Moline Public Hospital 1	Moline	City	191	7 707	R	12	3	No	Req	27	100
Oak Park Hospital 1	Oak Park	Church	148	5,298	R	12	6	No	None	21	75
West Suburban Hospital + x26	Oak Park	NPAssn	329	12 268	R	12	12	No	Req	47	50
Methodist Hospital of Central Illinois +1	Peoria	Church	200	8,319	R	12	8	No	None	42	125
St. Francis Hospital +1	Peoria	Church	530	16 167	R	12	12	No	Req	46	75
St. Mary's Hospital 1	Quincy	Church	200	7 916	R	12	5	No	Req	20	75
Rockford Memorial Hospital 1	Rockford	*NPAssn*	130	5,312	R	12	4	No	Req	49	100
St Anthony's Hospital 1	Rockford	Church	253	7 979	R	12	4	(152)	Req	42	75
Swedish American Hospital 1	Rockford	NPAssn	125	6 753	R	12	3	No	None	36	150
Memorial Hospital 1	Springfield	NPAssn	254	6,246	R	12	4	No	None	19	100

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Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
INDIANA											
St Catherine Hospital 1	East Chicago	Church	311	8 653	R	12	7	No	None	30	150
Protestant Deaconess Hospital +1	Evansville	Church	245	11 406	R	12	4	No	Req	33	100
Lutheran Hospital 1	Fort Wayne	Church	192	8,845	R	12	4	No	Req	28	100
St Mary s Hospital	Gary	Church	218	7 982	R	12	8	No	None	24	125
St Margaret Hospital +	Hammond	Church	260	10 862	R	12	10	No	None	37	150
Indianapolis General Hospital +1 1-X28	Indianapolis	City	685	9 844	R-S	12	36	(153)	Req	44	70
Indiana University Medical Center +1 1-X28	Indianapolis	State	581	11 198	R-S	12	24	(154)	Req	70	80
Methodist Hospital +1	Indianapolis	Church	623	23 862	R	12	22	No	Req	39	200
St. Vincent s Hospital +1	Indianapolis	Church	325	12 442	R	12	11	No	Req	45	150
St Elizabeth Hospital +	LaFayette	Church	305	8 732	R	12	10	No	Req	31	150
St Joseph Hospital 1	Mishawaka	Church	126	4 426	R	12	3	No	None	32	100
Ball Memorial Hospital +1	Muncie	NPAssn	250	9 642	R	12	6	No	None	37	75
Memorial Hospital +1	South Bend	NPAssn	220	9 108	R	12	4	No	Req	44	100
St. Joseph s Hospital 1	South Bend	Church	177	7 489	R	12	5	No	Req	35	125
St. Anthony Hospital 1	Terre Haute	Church	186	6 292	R	12	4	No	None	21	150
IOWA											
Mercy Hospital 1	Cedar Rapids	Church	207	10 049	R	12	4	No	None	36	100
St. Luke s Methodist Hospital +1	Cedar Rapids	Church	200	8 899	R	12	5	No	Req	46	100
Mercy Hospital 1	Council Bluffs	Church	185	5 627	R	12	4	No	None	23	100
Broadlawns Polk County Hospital +1	Des Moines	County	267	4,547	R	12	8	No	Req	53	75
Iowa Lutheran Hospital 1	Des Moines	Church	135	6 255	R	12	8	No	None	24	125
Iowa Methodist Hospital +1	Des Moines	Church	313	11 871	R	12	8	No	Req	61	100
Mercy Hospital +1	Des Moines	Church	190	8 774	R	12	6	(109)	None	69	150
University Hospitals +1 1-X29	Iowa City	State	891	18 210	R	12	20	No	Req	72	35
St Joseph Mercy Hospital 1 x71	Sioux City	Church	300	9 481	R	12	3	No	Req	21	175
KANSAS											
Bethany Hospital 1	Kansas City	Church	150	7 400	R	12	6	No	None	52	100
Providence Hospital 1	Kansas City	Church	140	6 169	R	12	4	(110)	Req	48	100
St. Margaret s Hospital +1	Kansas City	Church	196	6 420	R	12	6	No	Req	37	125
University of Kansas Medical Center +1-1-X30	Kansas City	State	420	11 136	R	12	11	No	Req	70	25
St Francis Hospital +1	Wichita	Church	465	16 565	R-S	12	8	No	None	43	125
Wesley Hospital +1	Wichita	Church	380	13,502	R	12	8	(155)	Req	40	100
Wichita Hospital 1	Wichita	Church	140	4,220	R	12	5	No	Req	38	150
KENTUCKY											
St Elizabeth Hospital 1	Covington	Church	312	9 610	R	12	13	No	Req	31	125
William Booth Memorial Hospital 1	Covington	Church	118	5,550	R	12	5	No	None	29	
Good Samaritan Hospital +1	Lexington	Church	300	10,591	R	12	6	No	None	30	75
St Joseph Hospital +1	Lexington	Church	314	10 359	R	12	6	No	Req	59	100
Kentucky Baptist Hospital	Louisville	Church	285	11 735	R	12	8	No	None	25	75
Louisville General Hospital +1 X31	Louisville	CyCo	359	10 066	R-S	12	18	(156)	Req	49	20
Norton Memorial Infirmary +	Louisville	NPAssn	280	9 479	R	12	6	No	None	37	75
St Anthony Hospital	Louisville	Church	220	7 738	R	12	5	No	None	34	125
St. Joseph Infirmary +	Louisville	Church	448	13 622	R	12	8	(157)	Req	34	150
SS Mary and Elizabeth Hospital	Louisville	Church	175	7 461	R	12	4	(111)	Req	27	150
LOUISIANA											
Baptist Hospital +1	Alexandria	Church	187	8 023	R	12	4	(158)	Req	31	100
Baton Rouge General Hospital +1	Baton Rouge	NPAssn	250	10 035	R	12	5	No	None	36	35
Charity Hospital of Louisiana +1 1-X32-33	New Orleans	State	2,559	54 593	R	12	122	No	Req	53	10
Hotel Dieu Sisters Hospital +1	New Orleans	Church	293	12 537	R	12	10	No	Req	36	50
Mercy Hospital-Soniat Memorial	New Orleans	Church	125	5 049	R	12	5	No	None	32	150
Ochsner Foundation Hospital +1	New Orleans	NPAssn	216	5,297	M	12	5	No	None	66	75
Southern Baptist Hospital +1	New Orleans	Church	342	15 142	R	12	12	No	None	52	50
Touro Infirmary +1 x33	New Orleans	NPAssn	371	17 342	R	12	19	No	Req	65	10
North Louisiana Sanitarium 1	Shreveport	Corp	130	4 654	R	12	3	No	None	25	150
Shreveport Charity Hospital +1	Shreveport	State	805	16 155	R	12	28	No	Req	49	20
T E. Schumpert Memorial Sanitarium 1	Shreveport	Church	107	7 188	R	12	2	No	None	43	250
MAINE											
Eastern Maine General Hospital +1	Bangor	NPAssn	292	8 445	R	12	6	No	Req	55	25
Central Maine General Hospital +1	Lewiston	NPAssn	226	5 764	R	12	6	No	Req	44	100
St. Mary s General Hospital 1	Lewiston	Church	155	5 388	R	12	3	No	Req	40	80
Maine General Hospital +1	Portland	NPAssn	343	8 490	R	12	9	No	Req	48	25
MARYLAND											
Baltimore City Hospital +1 1-x34-X35	Baltimore	City	1 810	7,322	R-S	12	35	No	Req	66	15
Bon Secours Hospital +	Baltimore	Church	158	5,328	R	12	3	No	Req	38	100
Church Home and Hospital +1	Baltimore	Church	173	5 468	R-S	12	5	(159)	Req	52	70
Franklin Square Hospital +1	Baltimore	NPAssn	200	5 838	R	12	8	(159)	Req	34	100
Hospital for Women +1	Baltimore	NPAssn	141	5 320	R	12	5	(112)	Req	36	25
Johns Hopkins Hospital +1 1-X34	Baltimore	NPAssn	993	18 776	S	12	68	No	Req	76	
Lutheran Hospital +1 3	Baltimore	Church	187	9 692	R	12	7	(204)	Req	81	75
Maryland General Hospital +1	Baltimore	Church	229	6 141	R	12	8	No	Req	32	50
Mercy Hospital +1 X35	Baltimore	Church	292	9 311	R	12	10	No	Req	56	50
Provident Hospital and Free Dispensary +1 3	Baltimore	NPAssn	132	3 531	R	12	6	No	Req	18	50
St. Agnes Hospital +1	Baltimore	Church	216	7 176	R	12	4	No	Req	53	75
St Joseph s Hospital +1	Baltimore	Church	250	6 980	R	12	8	No	Req	27	100
Sinai Hospital +1 3	Baltimore	NPAssn	313	10 439	R-S	12	21	No	Req	49	25
South Baltimore General Hospital +1	Baltimore	NPAssn	153	4 724	R	12	6	(160)	None	36	60
Union Memorial Hospital +1	Baltimore	NPAssn	335	8 697	R	12	16	No	Req	56	25
University Hospital +1 1-X35	Baltimore	State	435	11 081	R	12	32	No	Req	52	
Washington County Hospital 1	Hagerstown	NPAssn	158	6 569	R	12	5	No	Req	24	100
MASSACHUSETTS											
Beverly Hospital +1	Beverly	NPAssn	166	5 232	R	12	4	No	Req	93	50
Beth Israel Hospital +1 1-X37-38	Boston	NPAssn	365	6 868	S	12	13	(161)	Req	65	
Boston City Hospital +1 1-X36-38	Boston	City	2 376	37 147	S	12	77	No	Req	30	70
Carney Hospital + X38	Boston	Church	224	6,249	S	12	5	No	Req	32	50
Children s Medical Center +1 1-X37 x38	Boston	NPAssn	499	10,304	S	12	5	(162)	None	83	
Faulkner Hospital +1	Boston	NPAssn	144	4 022	M	12	3	No	None	66	25
Massachusetts General Hospital +1 1-X37	Boston	NPAssn	964	17 054	S	12	24	(163)	Req	68	
Massachusetts Memorial Hospitals +1 1-X36	Boston	NPAssn	359	7,260	S	12	17	(164)	Req	60	
New England Center Hospital +1 X38	Boston	NPAssn	170	5,514	S	12	11	(165)	Req	65	25
New England Hospital +2-x38	Boston	NPAssn	166	4 198	R	12	8	No	Req	35	25
Peter Bent Brigham Hospital +1 1-X37	Boston	NPAssn	250	5 169	S	12	21	(166)	Req	78	
St Elizabeth s Hospital +1 X38	Boston	Church	400	9 076	R	12	7	No	Req	47	75
Brockton Hospital 1	Brockton	NPAssn	170	4,357	R	12	4	No	Req	39	50
Cambridge City Hospital +1 x38	Cambridge	City	270	5,857	R	12	8	No	Req	48	100
Mount Auburn Hospital +1 x38	Cambridge	NPAssn	222	6 873	R	12	4	No	Req	61	50

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Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
MASSACHUSETTS—Continued											
Truesdale Hospital +[1]	Fall River	NPAssn	153	4 667	R	12	4	No	Req	58	50
Union Hospital [1]	Fall River	NPAssn	170	5,236	R	12	4	No	Req	29	150
Burbank Hospital +[1]	Fitchburg	City	250	5 895	R	12	4	No	Req	53	150
Holyoke Hospital +[1, 3]	Holyoke	NPAssn	140	4 045	R	12	3	No	Req	27	100
Lawrence General Hospital +[1]	Lawrence	NPAssn	189	6,309	R-S	12	4	No	Req	85	70
Lowell General Hospital [1]	Lowell	NPAssn	163	5 279	R	12	4	No	Req	46	50
St. John s Hospital [1]	Lowell	Church	189	6 710	R	12	4	No	Req	39	100
St Joseph s Hospital	Lowell	Church	182	5 494	R	12	2	No	Req	31	200
Lynn Hospital +[1]	Lynn	NPAssn	248	8 846	R	12	6	No	Req	43	100
St. Luke s Hospital +[1]	New Bedford	NPAssn	298	8,388	R	12-24	6	No	Req	33	100
Newton Wellesley Hospital +[1]	Newton Lower Falls	NPAssn	230	6 445	R	12	6	No	Req	50	25
Pittsfield General Hospital	Pittsfield	NPAssn	197	4 930	R	12	2	No	Req	30	50
St. Luke s Hospital [1]	Pittsfield	Church	150	4 490	R	12	2	No	None	28	100
Quincy City Hospital +[1]	Quincy	City	275	10 444	R	12-24	9	No	Req	72	100
Salem Hospital +[1]	Salem	NPAssn	239	7 676	R-S	12	4	No	Req	42	85
Mercy Hospital [1]	Springfield	Church	340	10 858	R	12	6	No	Req	37	40
Springfield Hospital +[1]	Springfield	NPAssn	281	8,586	R	12	8	(265)	Req	40	25
Wesson Memorial Hospital [1]	Springfield	NPAssn	130	4 633	R	12	4	(114)	None	40	100
Waltham Hospital [1] x38	Waltham	NPAssn	174	5 163	R	12	4	No	Req	40	125
Memorial Hospital +[1-3]	Worcester	NPAssn	269	9 721	R	12	10	No	Req	48	100
St. Vincent Hospital +	Worcester	Church	242	7,573	R	12	6	No	None	37	50
Worcester City Hospital +[1-3]-x38	Worcester	City	480	12 755	R	24	20	No	Req	49	50
MICHIGAN											
St Joseph s Mercy Hospital +[1]	Ann Arbor	Church	240	9,320	R	12	6	(115)	Req	53	100
University Hospital +[1-3]-X39	Ann Arbor	State	1 010	16 900	R	12	35	No	None	69	97 50
Leila Y Post Montgomery Hospital +[1]	Battle Creek	Church	175	7 864	R	12	2	No	Req	33	150
City of Detroit Receiving Hospital +[1] X40	Detroit	City	550	18 138	R	12	60	(167)	Req	55	170
Detroit Memorial Hospital +[1]	Detroit	NPAssn	294	10,377	R	12	10	No	Req	40	150
Evangelical Deaconess Hospital +[1]	Detroit	Church	168	9 931	R	12	5	No	Req	18	150
Grace Hospital +[1] x40	Detroit	NPAssn	641	27 441	R	12	30	No	Req	46	200
Harper Hospital +[1]	Detroit	NPAssn	600	24 765	R	12	35	(168)	Req	47	175
Henry Ford Hospital +[1]	Detroit	NPAssn	600	18,333	R	12	25	No	None	66	170
Jennings Memorial Hospital +[1]	Detroit	NPAssn	130	3 861	R	12	4	(169)	None	46	150
Mt. Carmel Mercy Hospital +[1]	Detroit	Church	450	19 427	R	12	18	(170)	Req	42	100
Providence Hospital +[1]	Detroit	Church	850	14 277	R-S	12	16	(171)	None	57	175
St. Joseph s Mercy Hospital +[1]	Detroit	Church	171	8 098	R	12	6	No	Req	38	150
Woman s Hospital +[1]	Detroit	NPAssn	246	10 972	R	12	6	(173)	Req	50	155
Wayne County General Hospital and Infirmary +[1]	Eloise	County	3 859	8 774	R	12	17	(174)	Req	33	222
Hurley Hospital +[1]	Flint	City	423	18,557	R	12	16	No	None	46	136
St. Joseph Hospital [1]	Flint	Church	230	11 680	R	12	5	No	Req	32	150
Blodgett Memorial Hospital +[1]	Grand Rapids	NPAssn	179	7 002	R	12	6	(175)	Req	54	150
Butterworth Hospital +[1]	Grand Rapids	NPAssn	270	14,283	R	12	13	No	Req	58	100
St Mary s Hospital +[1]	Grand Rapids	Church	256	9 882	R	12	7	No	Req	37	200
Highland Park General Hospital +[1]	Highland Park	City	255	10 011	R	12	7	No	Req	40	167
Borgess Hospital +	Kalamazoo	Church	250	7 698	R	12	4	No	None	21	
Bronson Methodist Hospital +[1]	Kalamazoo	Church	140	5 938	R	12	4	No	None	48	100
Edward W Sparrow Hospital +[1]	Lansing	NPAssn	281	10 384	R	12	8	(176)	Req	53	250
St. Lawrence Hospital +[1]	Lansing	Church	275	10 481	R	12	8	No	None	56	225
Hackley Hospital +[1]	Muskegon	NPAssn	184	8 194	R	12	5	No	Req	35	100
Pontiac General Hospital +[1]	Pontiac	City	198	10 315	R	12	4	(177)	Req	43	80
St. Joseph Mercy Hospital +[1]	Pontiac	Church	257	11 644	R	12	5	(116)	Req	29	200
Saginaw General Hospital +[1]	Saginaw	NPAssn	206	8 880	R	12	4	No	Req	62	250
St. Luke s Hospital +[1]	Saginaw	Church	80	3 815	R	12	4	No	None	38	100
St. Mary s Hospital [1]	Saginaw	Church	172	8 991	R	12	4	No	None	36	250
James Decker Munson Hospital [1]	Traverse City	NPAssn	134	4 668	R	12	4	(117)	None	54	97
MINNESOTA											
St. Luke s Hospital	Duluth	NPAssn	287	11 604	R	12	13	(178)	Req	72	50
St. Mary s Hospital +[1]	Duluth	Church	265	10 585	R	12	8	(178)	Req	67	75
Abbott Hospital +	Minneapolis	Church	126	7 903	R	12	4	(179)	None	50	175
Asbury Hospital +[1]	Minneapolis	Church	150	6 638	R	12	4	No	None	42	100
Lutheran Deaconess Home and Hospital +[1]	Minneapolis	Church	160	7 455	R	12	3	No	None	29	50
Minneapolis General Hospital +[1] X41	Minneapolis	City	574	8 158	R	12	36	No	Req	62	50
Northwestern Hospital +[1]	Minneapolis	NPAssn	260	10 822	R-S	12	8	No	None	66	75
St. Barnabas Hospital +[1]	Minneapolis	NPAssn	200	10 125	R	12	5	(180)	Req	70	
St. Mary s Hospital +[1]	Minneapolis	Church	335	13 590	R	12	7	(180)	None	45	75
Swedish Hospital +[1]	Minneapolis	NPAssn	420	15 591	R	12	6	No	Req	41	125
University of Minnesota Hospitals +[1-3] X41	Minneapolis	State	450	10 619	S	12	27	(181)	Req	79	15
Ancker Hospital +[1]-x41	St. Paul	CyCo	850	7 964	R	12	24	No	Req	60	30
Bethesda Hospital [1]	St. Paul	Church	162	8 301	R	12	4	(182)	Req	68	100
Charles T Miller Hospital +[1]	St. Paul	NPAssn	275	9,296	R	12	7	(181)	Req	57	50
St. Joseph s Hospital +[1]	St. Paul	Church	291	11 333	R	12	10	(265)	Req	42	75
St. Luke s Hospital [1]	St. Paul	NPAssn	116	5,297	R	12	4	No	Req	28	100
MISSISSIPPI											
Mississippi Baptist Hospital +	Jackson	Church	264	12 258	R	12	8	(183)	None	15	50
Mercy Hospital Street Memorial +[1]	Vicksburg	Church	125	3 996	R	12	4	No	Req	23	100
MISSOURI											
St. Louis County Hospital +[1]	Clayton	County	216	3 565	R	12	6	No	Req	61	65
Kansas City General Hospital No 1+	Kansas City	City	550	10 134	R	12	30	No	Req	60	50
Kansas City General Hospital No 2 +[1]	Kansas City	City	267	3 672	R	12	12	No	Req	36	50
Menorah Hospital Medical Center +[1]	Kansas City	NPAssn	160	6 707	R	12	8	No	Req	59	100
Research Hospital +[1]	Kansas City	NPAssn	250	7 780	R	12	6	No	Req	61	100
St. Joseph Hospital +	Kansas City	Church	324	13 044	R	12	7	No	Req	66	100
St. Luke s Hospital +[1]	Kansas City	Church	375	11 111	R	12	6	No	None	63	100
St. Mary s Hospital +[1]	Kansas City	Church	300	7 841	R	12	8	(188)	None	55	100
Trinity Lutheran Hospital [1]	Kansas City	Church	145	5 678	R	12	4	(189)	None	47	100
Missouri Methodist Hospital +	St. Joseph	Church	300	7 466	R	12	4	No	Req	24	150
St. Joseph s Hospital [1]	St. Joseph	Church	148	5 732	R	12	2	No	Req	21	200
Barnes Hospital +[1]-X43	St Louis	NPAssn	602	17 194	S	12	20	(195)	Req	72	10
Christian Hospital	St. Louis	NPAssn	125	4 040	R	12	2	No	None	27	175
De Paul Hospital +[1]	St Louis	Church	274	9 068	R	12	9	No	Req	38	100
Evangelical Deaconess Hospital [1]	St. Louis	Church	257	10,390	R	12	8	No	Req	40	100
Homer G Phillips Hospital +[1, 3]-X43-73	St. Louis	City	694	14 403	R	12	30	(197)	Req	26	107 50
Jewish Hospital +[1]	St. Louis	NPAssn	298	9 137	R	12	11	No	Req	43	75
Lutheran Hospital	St Louis	Church	165	6 252	R	12	5	No	None	34	100
Missouri Baptist Hospital +[1]	St Louis	Church	450	12,288	R	12	8	No	None	31	75
St Anthony s Hospital +[1]-x42	St. Louis	Church	260	7 987	R	12	7	(198)	Req	41	100
St. John s Hospital + x42	St. Louis	Church	357	10,255	R	12	11	(199)	Req	47	60
St Louis City Hospital +[1, 3]-X42-43	St. Louis	City	1 059	16 860	R-S	12	56	No	Req	42	107 50
St. Luke s Hospital +[1]	St. Louis	Church	184	5,388	R	12	6	No	Req	36	100
St. Mary s Group of Hospitals +[1, 3]-X42	St. Louis	Church	733	16 703	R	12	26	No	Req	45	30

Abbreviations and other references will be found on pages 398 and 399

Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
MONTANA											
St. James Hospital +	Butte	Church	160	5 386	R	12	3	No	Req	35	125
Montana Deaconess Hospital +[1]	Great Falls	Church	200	6,577	R	12	4	No	None	85	50
NEBRASKA											
Bryan Memorial Hospital [1]	Lincoln	Church	123	4 054	R	12	4	No	None	61	135
Lincoln General Hospital +[1]	Lincoln	NPAssn	183	5 499	R	12	4	No	Req	61	100
St. Elizabeth Hospital +[1]	Lincoln	Church	220	8 175	R	12	4	No	Req	44	100
Bishop Clarkson Memorial Hospital +[1]-X45	Omaha	Church	185	6 673	R	12	8	(184)	None	50	100
Creighton Memorial St. Joseph's Hospital +[1]-X44	Omaha	Church	450	13 428	R	12	13	(185)	None	40	50
Immanuel Deaconess Institute [1] X45	Omaha	Church	121	4 796	R	12	4	(186)	None	50	100
Nebraska Methodist Hospital +[1] X45	Omaha	Church	179	6 619	R	12	5	No	Req	59	50
St. Catherine's Hospital [1] X44	Omaha	Church	165	6 401	R	12	6	(187)	None	47	50
University of Nebraska Hospital +[1]	Omaha	State	237	3 653	R	12	12	(190)	None	91	75
NEW HAMPSHIRE											
Mary Hitchcock Memorial Hospital +[1] X46	Hanover	NPAssn	207	6 060	R	12	12	No	Req	81	10
NEW JERSEY											
Atlantic City Hospital +[1]	Atlantic City	NPAssn	253	8 422	R	12	8	(191)	Req	53	100
Bayonne Hospital and Dispensary +[1]	Bayonne	NPAssn	220	6 444	R	12	5	No	Req	45	100
Cooper Hospital +[1] x65-67	Camden	NPAssn	383	15 404	R	12	11	No	Req	51	50
West Jersey Hospital +[1]-x64	Camden	NPAssn	279	8 518	R-S	12	8	No	Req	48	100
East Orange General Hospital [1]	East Orange	NPSsan	150	4 972	R	12	4	No	Req	22	75
Alexian Brothers Hospital	Elizabeth	Church	166	3 435	R	12	4	(192)	Req	31	100
Elizabeth General Hospital and Dispensary [1]	Elizabeth	NPAssn	202	7 723	R	12	8	No	Req	30	100
St. Elizabeth Hospital [1]	Elizabeth	Church	229	5,531	R	12	6	No	Req	37	100
Englewood Hospital +[1]	Englewood	NPAssn	190	6 773	R	12	6	No	Req	31	50
Hackensack Hospital +[1]	Hackensack	NPAssn	250	11 638	R	12	10	No	Req	26	144
St. Mary's Hospital [1]	Hoboken	Church	370	6 698	R	24	13	No	Req	39	75
Christ Hospital [1]	Jersey City	Church	322	6 633	R	12	12	No	Req	21	100
Jersey City Hospital +[1] [3]	Jersey City	City	1 600	25 309	RMS	12	60	(193)	Req	30	25
St Francis Hospital	Jersey City	Church	216	4,377	R	12	6	No	None	37	75
Monmouth Memorial Hospital +[1] [3]	Long Branch	NPAssn	253	7 664	R	12	9	No	Req	38	100
Mountainside Hospital +[1] [3]	Montclair	NPAssn	305	8 406	R	12	8	No	Req	48	54 16
Morristown Memorial Hospital [1]	Morristown	NPAssn	122	4 145	R	12	4	No	Req	40	110
Fitkin Memorial Hospital +[1]	Neptune	NPAssn	234	7 397	R	12	6	No	Req	40	100
Hospital of St. Barnabas and for Women and Children +[1]	Newark	Church	249	7 987	R	12	6	No	Req	47	50
Newark Beth Israel Hospital +[1] [3]	Newark	NPAssn	365	11 896	R	12	12	No	Req	43	25
Newark City Hospital +[1] [3]	Newark	City	740	18 133	R	12-24	18	No	Req	29	60
St. Michael's Hospital +	Newark	Church	405	12 456	R	12	7	No	Req	42	75
St Peter's General Hospital +	New Brunswick	Church	188	7 012	R	12	5	No	Req	57	100
Orange Memorial Hospital +[1]	Orange	NPAssn	390	9 569	R	12	8	No	Req	46	35
Passaic General Hospital +[1]	Passaic	NPAssn	247	7 803	R	12	5	No	Req	40	75
St. Mary's Hospital [1]	Passaic	Church	190	7 440	R	12	4	No	Req	27	60
Barnert Memorial Hospital [1]	Paterson	NPAssn	121	4 710	R	12	5	No	Req	22	75
Paterson General Hospital +[1]	Paterson	NPAssn	372	10 534	R	12	8	No	Req	36	50
St. Joseph Hospital +[1]	Paterson	Church	366	9,526	R-S	12	10	No	Req	38	100
Muhlenberg Hospital +[1]	Plainfield	NPAssn	270	10,253	R	12	8	No	Req	22	100
Overlook Hospital [1]	Summit	NPAssn	145	4 644	R	12	4	No	Req	35	90
Holy Name Hospital [1]	Teaneck	Church	185	8 144	R	12	6	No	Req	56	100
Mercer Hospital +[1]	Trenton	NPAssn	246	8 075	R	12	6	No	Req	42	105
St. Francis Hospital +[1]	Trenton	Church	300	8 431	R	12	8	No	Req	31	150
William McKinley Memorial Hospital [1]	Trenton	NPAssn	149	4 620	R	12	4	No	Req	28	100
North Hudson Hospital [1]	Weehawken	NPAssn	166	3,221	R	12	4	(194)	Req	30	100
NEW YORK											
Albany Hospital +[1] [3]-X47	Albany	NPAssn	541	15 215	R-S	12-24-36	27	No	Req	58	25
Memorial Hospital [1]	Albany	NPAssn	137	3 782	R	12	5	No	Req	51	125
St. Peter's Hospital +[1] x47	Albany	Church	275	7 489	R	12	5	(196)	Req	19	75
Auburn City Hospital [1]	Auburn	NPAssn	208	6 402	R	12	4	No	None	35	100
Binghamton City Hospital +[1] [3]	Binghamton	City	448	11 116	R	12	8	No	Req	57	116 50
Beth El Hospital +[1]	Brooklyn	NPAssn	242	8,534	R-S	12	12	No	Req	72	50
Brooklyn Hospital +[1] X53	Brooklyn	NPAssn	362	9 298	R	12	9	No	Req	40	20
Bushwick Hospital [1]	Brooklyn	NPAssn	101	4 872	R	12	4	No	Req	33	125
Coney Island Hospital +[1] [3]	Brooklyn	City	286	6 648	R	12	20	No	Req	26	60
Cumberland Hospital +[1] [3]	Brooklyn	City	284	8,322	R S	12	26	No	Req	25	50
Greenpoint Hospital +[1] [3]-x53	Brooklyn	City	281	6 476	R	12	20	No	Req	30	50
Jewish Hospital +[1] [3]-X53	Brooklyn	NPAssn	500	15 717	RMS	12	35	(200)	None	38	25
Kings County Hospital +[1] [3]-X53	Brooklyn	City	2 506	61,205	RMS	12	152	No	Req	23	50
Long Island College Hospital +[1] X53	Brooklyn	NPAssn	394	10 545	S	12	21	(201)	Req	31	
Maimonides Hospital +[1] X53	Brooklyn	NPAssn	366	10 101	R-S	12	28	No	Req	32	35
Methodist Hospital +[1] x53	Brooklyn	Church	462	10 694	R-S	12 24	10	No	Req	44	15
Norwegian Lutheran Deaconesses Home and Hosp +[1]	Brooklyn	Church	207	5 791	R S	12	6	No	Req	67	50
St Catherine's Hospital +[1]	Brooklyn	Church	287	7,319	R-S	12	14	No	Req	31	35
St John's Episcopal Hospital +[1]	Brooklyn	Church	258	5 454	R-S	12	9	No	Req	29	70
St Mary's Hospital +[1]	Brooklyn	Church	237	6 038	R	12	10	No	Req	40	45
Unity Hospital +[1]	Brooklyn	NPAssn	226	6 937	R	12	8	No	Req	25	100
Wyckoff Heights Hospital +[1]	Brooklyn	NPAssn	167	6 006	R	12	4	No	Req	37	30
Allied Hospital of the Sisters of Charity +[1] [3]	Buffalo	Church	619	18 850	R	12	12	(203)	Req	32	125
Buffalo General Hospital +[1] [3]-X48	Buffalo	NPAssn	448	11,210	R-S	12 24	23	(202)	Req	54	25
Deaconess Hospital +[1]	Buffalo	NPAssn	277	9 939	R	12	6	No	Req	28	100
Edward J Meyer Memorial Hospital +[1] [3]-X48	Buffalo	County	858	10 353	R	12	17	No	Req	38	91 66
Mercy Hospital	Buffalo	Church	325	9 666	R	12	12	No	Req	24	125
Millard Fillmore Hospital +[1] [3]-x48	Buffalo	NPAssn	473	17 238	R-S	12	12	No	Req	50	25
Mary Imogene Bassett Hospital +[1] x47 X49	Cooperstown	NPAssn	90	2 628	R-S	12-24	6	No	Req	65	50
Arnot Ogden Memorial Hospital [1]	Elmira	NPAssn	197	6 895	R	12	3	(205)	None	37	150
St Joseph's Hospital [1]	Elmira	Church	229	6 878	R	12	4	No	None	36	190
Flushing Hospital and Dispensary +[1] [3]	Flushing	NPAssn	282	11 673	R	12	9	No	Req	35	100
North Country Community Hospital [1]	Glen Cove	NPAssn	105	4 024	R	12	4	No	Req	22	100
Glens Falls Hospital [1]	Glens Falls	NPAssn	250	8 694	R	12	4	No	None	22	150
Meadowbrook Hospital +[1] [3]	Hempstead	County	250	7 669	R	12-24	24	No	Req	53	70
Jamaica Hospital +[1]	Jamaica	NPAssn	185	6,559	R	12	8	No	Req	33	100
Mary Immaculate Hospital +[1] [3]	Jamaica	Church	295	8 850	R S	12	9	No	Req	22	90
Queens General Hospital +[1] [3]-X51	Jamaica	City	776	14 219	R S	12 24	39	No	None	43	50
Charles S Wilson Memorial Hospital +[1]	Johnson City	NPAssn	450	9 696	R	12 24	9	No	Req	42	125
Our Lady of Victory Hospital	Lackawanna	Church	260	6 358	R	12 24	4	No	Req	20	150
St John's Long Island City Hospital +[1] [3]	Long Island City	Church	230	5 743	R	12	14	No	Req	34	50

Abbreviations and other references will be found on pages 398 and 399

Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
NEW YORK—Continued											
Nassau Hospital +	Mineola	NPAssn	227	9 972	R	12	4	No	Req	36	75
Northern Westchester Hospital [1]	Mount Kisco	NPAssn	137	4 138	R	12	4	No	Req	39	100
Mount Vernon Hospital +	Mount Vernon	NPAssn	218	8 080	R	12	6	No	Req	46	75
St Luke s Hospital [1] [3]	Newburgh	NPAssn	188	5 884	R	12	4	No	Req	25	100
New Rochelle Hospital +	New Rochelle	NPAssn	298	9 094	R	12	8	(206)	Req	60	100
Bellevue Hospitals X49-50-52											
Division I—Columbia University +[1] [3]	New York City	City			M S	12	8	No	Req	41	50
Division II—Cornell University +[1] [3]	New York City	City			M-S	12	12	No	Req	41	50
Division III—New York University +[1] [3]	New York City	City			M-S	12	60	(207)	Req	41	50
Division IV—New York University +[1]-[3]	New York City	City			S	12	14	(208)	Req	41	50
Beth David Hospital + x51	New York City	NPAssn	167	4 809	R	12	12	No	None	30	50
Beth Israel Hospital +[1] [3]-x52	New York City	NPAssn	382	9 855	R	12	14	No	Req	65	25
Bronx Hospital +[1] [3]	New York City	NPAssn	329	9 811	R-S	12	16	No	Req	42	35
Columbus Hospital	New York City	Church	260	5 633	R	12	12	No	Req	33	75
Flower and Fifth Avenue Hospitals +[1] [3]-X51	New York City	NPAssn	360	10 520	S	12	13	No	Req	40	
Fordham Hospital +[1] [3]	New York City	City	414	9 803	R	12	24	No	Req	29	50
French Hospital +[1]	New York City	NPAssn	251	6 665	R	12	9	(209)	Req	34	50
Goldwater Memorial Hospital +[1] [3]-X49-x52	New York City	City	1 500	1 709	M	12	6	No	Req	30	50
Gouverneur Hospital +[1] [3]	New York City	City	177	3 197	R	12	0	No	None	16	
Harlem Hospital +[1] [3]	New York City	City	789	23 926	R	12	52	No	None	25	50
Hospital for Joint Diseases +[1] [3]	New York City	NPAssn	362	5 724	R-S	12	12	(210)	Req	50	25
Jewish Memorial Hospital +[3]	New York City	NPAssn	190	5 667	R	12	12	No	Req	31	50
Knickerbocker Hospital +[1]	New York City	NPAssn	192	4 633	R	12	6	No	Req	31	100
Lebanon Hospital +[1]	New York City	NPAssn	215	6 634	R	12	8	No	None	37	50
Lenox Hill Hospital +[1] [3]-x52	New York City	NPAssn	530	12 906	R	24	24	No	Req	35	
Lincoln Hospital +[1] [3]	New York City	City	391	13 529	R	12	15	No	Req	28	50
Metropolitan Hospital +[1] [3]-X51	New York City	City	1 060	13 953	R	12	38	No	Req	25	50
Misericordia Hospital +	*New York City*	*Church*	*181*	*4 779*	*R*	*12*	*7*	No	*Req*	*25*	*60*
Montefiore Hospital for Chronic Diseases +[1] [3]-X49	New York City	NPAssn	627	4 237	M S	12	14	No	None	48	30
Morrisania City Hospital +[1] [3]-X51	New York City	City	466	11 846	R	12	29	No	Req	26	50
Mother Cabrini Memorial Hospital +[1]	New York City	Church	170	3 753	R	12	6	No	Req	25	75
Mount Sinai Hospital +[1] [3]-x49	New York City	NPAssn	785	15 565	R	12	24	No	None	47	25
New York City Hospital +[1] [3]-X51	New York City	City	837	13 360	R-S	12	30	No	Req	32	50
New York Hospital +[1] [3]-X50	New York City	NPAssn	1 081	22 152	S	12	36	No	Req	68	
New York Infirmary +[2] [3]	New York City	NPAssn	121	3 618	R	12	5	No	Req	54	30
New York Polyclinic Medical School and Hospital +[3]	New York City	NPAssn	374	9,556	R	12	8	No	Req	43	50
Presbyterian Hospital +[1] [3]-X49	New York City	NPAssn	1 377	31 429	S	12	40	No	Req	57	167
Roosevelt Hospital +[1] [3]-X49	New York City	NPAssn	415	8 782	M	12 24	12	No	Req	49	
St Clare s Hospital +[1]	New York City	Church	436	11 694	R	12	9	No	Req	57	10
St. Francis Hospital +[1]	New York City	Church	402	9 661	R	12	8	No	None	25	50
St. Luke s Hospital +[1] [3]-X49	New York City	NPAssn	545	10 434	M	12	9	No	Req	58	
St. Vincent s Hospital +[1]-x52	New York City	Church	575	12 057	R-S	12	20	No	Req	58	
Sydenham Hospital +[1] [3]	New York City	NPAssn	221	5 520	R	12	12	No	Req	36	50
University Hospital +[1] [3]-x52	New York City	NPAssn	395	9 535	S	12	4	(?11)	Req	35	50
Mount St Mary s Hospital [1]	Niagara Falls	Church	200	5 911	R	12	2	No	None	44	150
United Hospital +[1]	Port Chester	NPAssn	188	6 205	R	12	6	No	Req	37	100
St. Francis Hospital	Poughkeepsie	Church	107	3 565	R	12	4	No	Req	42	200
Vassar Brothers Hospital +	Poughkeepsie	NPAssn	207	7 541	R	12	4	(206)	Req	31	75
Genesee Hospital +[1]-x54	Rochester	NPAssn	222	8 401	R-S	12	8	No	Req	65	15
Highland Hospital +[1]-x54	Rochester	NPAssn	200	7 171	R	12	9	No	Req	59	75
Rochester General Hospital +[1]-x54	Rochester	NPAssn	326	12 611	R	12	21	(212)	Req	67	40
St Mary s Hospital +[1]-x54	Rochester	Church	335	12 688	R	12	6	No	Req	42	75
Strong Memorial Rochester Municipal Hospitals +[1] [3]-X54	Rochester	NPAssn	634	16 352	R S	12-24	35	(213)	Req	71	15
Ellis Hospital +[1] X47	Schenectady	NPAssn	371	13 545	R	12	10	No	Req	54	60
St Clare s Hospital [1]	Schenectady	Church	199	5 300	R	12	5	No	None	22	150
St. Vincent s Hospital +	Staten Island	Church	247	7 849	R	12	8	No	Req	31	100
Staten Island Hospital +[1]	Staten Island	NPAssn	223	6 460	R M	24	5	No	Req	40	100
Crouse Irving Hospital +[1]-x55	Syracuse	NPAssn	210	7 548	R	12	4	No	None	36	100
General Hospital +[1]-x55	Syracuse	NPAssn	129	5 494	M	12	4	No	Req	27	100
St. Joseph s Hospital +[1] x55	Syracuse	Church	202	7 720	R	12	6	No	Req	36	100
State University Medical Center											
Hospital of the Good Shepherd +[1] X55	Syracuse	NPAssn	196	4 921	R	12	10	(215)	None	47	
Syracuse Memorial Hospital +[1] X55	Syracuse	NPAssn	283	9 345	R	12	7	(215)	Req	47	100
St. Mary s Hospital [1]	Troy	Church	241	6 857	R	12	5	No	Req	23	100
Samaritan Hospital +[1]	Troy	NPAssn	162	5 412	R	12	4	No	Req	33	125
Grasslands Hospital +[1] [3]	Valhalla	County	800	4 458	R	12	20	No	Req	60	25
St. Agnes Hospital	White Plains	Church	138	4 004	R	12	4	No	Req	25	100
White Plains Hospital +[1]	White Plains	NPAssn	200	6 258	R	12	3	No	Req	60	50
St. John s Riverside Hospital [1]	Yonkers	NPAssn	213	7 614	R	12	6	No	Req	29	100
St Joseph s Hospital [1]	Yonkers	Church	195	3 641	R	12	5	No	Req	25	100
Yonkers General Hospital [1]	Yonkers	NPAssn	143	5,378	R	12	4	No	Req	28	100
NORTH CAROLINA											
Charlotte Memorial Hospital +[1]	Charlotte	NPAssn	343	10 608	R	12	7	No	Req	64	50
Mercy Hospital [1]	Charlotte	Church	244	9 788	R	12	5	No	Req	33	50
Duke Hospital +[1] [3]-X57	Durham	NPAssn	524	15 634	R-S	12	43	No	Req	60	
Lincoln Hospital +[1]	Durham	NPAssn	90	2 989	R	12	4	No	Req	23	50
Watts Hospital +[1]-x56	Durham	NPAssn	200	10 528	RMS	12	11	No	Req	38	75
Rex Hospital +[1]-x56	Raleigh	NPAssn	312	11 653	R	12	8	No	Req	26	100
St. Agnes Hospital [1] x73	Raleigh	Church	120	2 684	R	12	4	No	Req	11	175
James Walker Memorial Hospital +[1]	Wilmington	NPAssn	300	9 624	R	12	0	No	Req	28	100
City Memorial Hospital +[1]	Winston Salem	City	184	7,564	R	12	12	No	Req	34	100
Kate Bitting Reynolds Memorial Hospital +[1]	Winston Salem	City	200	5,249	R	12	6	No	Req	26	100
North Carolina Baptist Hospital +[1] [3]-X58	Winston Salem	Church	250	8 466	S	12	12	No	Req	56	
NORTH DAKOTA											
St John s Hospital [1]	Fargo	Church	173	6 550	R	12	5	No	None	38	75
St. Luke s Hospital +	Fargo	Church			R		4				
Grand Forks Deaconess Hospital [1]	Grand Forks	NPAssn	120	7 846	R	12	5	No	Req	45	130
OHIO											
City Hospital +[1]	Akron	NPAssn	410	16 033	R	12	15	(216)	None	39	100
Peoples Hospital +[1]	Akron	NPAssn	210	10 098	R	12	4	(216)	Req	45	50
St. Thomas Hospital +	Akron	Church	205	8 973	R	12	4	No	Req	38	85
Aultman Hospital +[1]	Canton	NPAssn	301	10 538	R	12	7	No	Req	64	100
Mercy Hospital +[1]	Canton	Church	240	10 462	R	12	6	No	Req	34	100
Bethesda Hospital +[1]	Cincinnati	Church	218	9 022	R	12	7	(217)	Req	42	100
Christ Hospital +[1]	Cincinnati	Church	374	11 344	R	12	13	(217)	Req	39	100

Abbreviations and other references will be found on pages 398 and 399

Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
OHIO—Continued											
Cincinnati General Hospital +[1] [3] X59	Cincinnati	City	865	15,219	R-M	12	52	(218)	Req	58	15
Deaconess Hospital +[1]	Cincinnati	Church	168	6 144	R	12	5	(219)	Req	26	100
Good Samaritan Hospital +[1]	Cincinnati	Church	556	17 165	R	12	16	No	Req	37	130
Jewish Hospital +[1]	Cincinnati	NPAssn	265	10 614	R	12	13	(219)	Req	57	50
St. Mary's Hospital +[1]	Cincinnati	Church	190	5 379	R-S	12	5	No	Req	28	100
City Hospital +[1] [3]-X60	Cleveland	City	1 040	10,999	R	12	24	No	Req	46	47
Fairview Park Hospital +[1]	Cleveland	Church	150	7 571	R	12	5	No	Req	39	75
Glenville Hospital [1]	Cleveland	NPAssn	120	4,458	M	12	4	No	Req	38	85
Lutheran Hospital +[1]	Cleveland	Church	194	6 424	R	12	6	No	None	52	75
Mount Sinai Hospital +[1] [3]-x60	Cleveland	NPAssn	302	11,305	R-S	24	15	No	Req	56	50
St Alexis Hospital +[1]	Cleveland	Church	234	9,343	R S	12	6	No	Req	37	75
St John's Hospital +[1]	Cleveland	Church	236	9 015	R	12	7	No	Req	31	75
St Luke's Hospital +[1] [3]	Cleveland	Church	383	15 473	R	12	22	No	Req	44	75
St. Vincent Charity Hospital +[1]-x60	Cleveland	Church	289	7 574	R	12	12	(220)	Req	35	50
University Hospitals +[1] [3] X60	Cleveland	NPAssn	792	22 691	S	12 24	20	No	Req	52	
Doctors Hospital +[1]	Cleveland Heights	NPAssn	185	6 681	R	12	8	No	None	35	100
Grant Hospital +[1]	Columbus	NPAssn	285	10 552	R	12	8	No	None	39	200
Mount Carmel Hospital +[1]	Columbus	Church	280	10 917	R	12	6	(222)	Req	45	75
Ohio State University Hospital +[1] [2]-X61	Columbus	State	275	9 193	R-S	12 24	48	(223)	None	81	9
White Cross Hospital +[1]	Columbus	Church	379	12 264	R	12	7	No	None	38	50
Good Samaritan Hospital [1]	Dayton	Church	315	19 374	R	12	6	No	None	35	50
Miami Valley Hospital +[1] [3]	Dayton	NPAssn	424	16 967	R	12-24	16	No	Req	41	50
St. Elizabeth Hospital +[1]	Dayton	Church	325	12 521	R	12 24	6	No	Req	34	125
Huron Road Hospital +[1]	East Cleveland	NPAssn	284	10 422	R	12	10	No	Req	43	100
Marymount Hospital [1]	Garfield Heights	Church	150	5 960	R	12	6	No	None	39	100
Mercy Hospital +[1]	Hamilton	Church	300	9 149	R	12	4	No	Req	36	150
Lakewood Hospital +[1]	Lakewood	City	300	5,537	R	12	4	No	Req	39	75
Lima Memorial Hospital [1]	Lima	NPAssn	236	7 753	R	12	5	No	Req	24	75
St. Rita's Hospital +[1]	Lima	Church	300	11,583	R	12	6	(224)	Req	45	150
Springfield City Hospital +[1]	Springfield	City	250	7 057	R	12	7	No	Req	59	125
Flower Hospital [1]	Toledo	Church	170	7 931	R	12	4	(225)	Req	38	150
Maumee Valley Hospital +[1]	Toledo	County	292	4 299	R	12	6	No	Req	44	100
Mercy Hospital +[1]	Toledo	Church	284	12 212	R	12	7	No	Req	45	100
Riverside Hospital [1]	Toledo	NPAssn	199	5 993	R	12	4	No	Req	42	150
St. Vincent's Hospital +[1]	Toledo	Church	525	12 697	R	12	10	No	Req	40	200
Toledo Hospital +[1]	Toledo	NPAssn	266	10,346	R	12	7	No	Req	58	100
St Elizabeth Hospital +[1]	Youngstown	Church	330	13 543	R	12	7	No	Req	35	100
Youngstown Hospital +[1] [3]	Youngstown	NPAssn	635	20 988	R	12	18	No	Req	51	100
OKLAHOMA											
Mercy Hospital [1]	Oklahoma City	Church	146	6 961	R	12	6	(226)	None	37	
St. Anthony Hoxpital + x62	Oklahoma City	Church	375	13 606	R	12	9	No	Req	36	75
University Hospitals +[1] [3] X62	Oklahoma City	State	459	7 75[illegible]	R	12 24	24	No	Req	47	
Wesley Hospital +[1]	Oklahoma City	Part	188	9 081	R	12	8	No	Req	67	75
Hillcrest Memorial Hospital +[1]	Tulsa	NPAssn	258	11,248	R	12	10	No	Req	45	50
St. John's Hospital +[1]	Tulsa	Church	430	17 305	R	12	12	No	None	39	100
OREGON											
Sacred Heart General Hospital [1]	Eugene	Church	180	10 110	R	12	5	No	Req	60	100
Emanuel Hospital +[1]	Portland	Church	350	13 941	R	12	11	(228)	Req	50	60
Good Samaritan Hospital +[1] x63	Portland	Church	412	12 995	R	12	10	No	None	68	120
Portland Sanitarium and Hospital [1]	Portland	Church	162	7,339	R	12	7	No	None	45	113
Providence Hospital +[1]	Portland	Church	280	9 416	R	12	12	(229)	None	58	50
St. Vincent's Hospital +[1]-x63	Portland	Church	367	11 337	R	12	10	(230)	Req	63	50
University of Oregon Medical School Hospitals and Clinics +[1] [2]-X63	Portland	State	453	7 357	R	12	18	No	Req	74	50
PENNSYLVANIA											
Abington Memorial Hospital +[1]-[3]	Abington	NPAssn	300	8 168	R	12	10	No	Req	56	
Allentown Hospital +[1]	Allentown	NPAssn	434	13 070	R	12	10	No	Req	58	75
Sacred Heart Hospital +[1]	Allentown	Church	390	8 325	R	12	7	No	Req	36	75
Altoona Hospital [1]	Altoona	NPAssn	220	6 918	R	12	6	No	Req	28	200
Mercy Hospital [1]	Altoona	NPAssn	176	5 789	R	12	4	No	Req	31	110
St. Luke's Hospital +[1] [3]	Bethlehem	NPAssn	352	10 773	R	12	8	No	Req	58	75
Bryn Mawr Hospital +[1] [3]	Bryn Mawr	NPAssn	285	8 096	R	12	10	No	Req	56	
Chester Hospital [1] [2]	Chester	NPAssn	294	7 688	R	12	6	No	None	35	90
George F Geisinger Memorial Hospital and Clinic +[1] [3]	Danville	NPAssn	205	8 967	R	12	10	No	Req	55	20
Fitzgerald Mercy Hospital +[1]	Darby	Church	202	7 252	R	12	8	No	Req	50	100
Easton Hospital +[1]	Easton	NPAssn	197	6 381	R	12	5	No	Req	42	100
Hamot Hospital +[1]	Erie	NPAssn	289	10 089	R	12	8	No	Req	44	100
St. Vincent's Hospital +[1]	Erie	NPAssn	299	11,233	R	12	8	No	Req	40	100
Westmoreland Hospital +[1]	Greensburg	NPAssn	190	7,286	R	12	4	No	Req	25	100
Harrisburg Hospital +[1] X64	Harrisburg	NPAssn	312	11 077	R	12	12	No	Req	48	100
Harrisburg Polyclinic Hospital +[1]	Harrisburg	NPAssn	273	8 466	R	12	12	No	Req	36	150
Conemaugh Valley Memorial Hospital [1]	Johnstown	NPAssn	346	10 935	R	12	10	No	Req	26	100
Nesbitt Memorial Hospital [1]	Kingston	NPAssn	200	6 581	R	12	3	No	Req	28	200
Lancaster General Hospital +[1]	Lancaster	NPAssn	293	9,532	R	12	8	No	Req	45	100
St Joseph's Hospital +[1]	Lancaster	Church	232	6 623	R	12	6	No	Req	55	175
McKeesport Hospital [1]	McKeesport	NPAssn	275	9,235	R	12	10	No	Req	31	175
Montgomery Hospital [1]	Norristown	NPAssn	187	6 521	R	12	6	No	Req	32	100
Sacred Heart Hospital [1]	Norristown	Church	105	3 595	R	12	4	No	Req	41	100
Episcopal Hospital +[1] [2]-x65-67 X66	Philadelphia	Church	495	8 019	R	12	11	No	Req	44	25
Frankford Hospital +[1]	Philadelphia	NPAssn	141	5 505	R	12	7	No	Req	62	150
Germantown Dispensary and Hospital +[1] [2]-x65	Philadelphia	NPAssn	328	8,253	R	12	12	No	Req	48	25
Graduate Hospital of the University of Pennsylvania +[1] [3]	Philadelphia	NPAssn	352	7 981	R	12	12	(231)	Req	65	
Hahnemann Hospital +[1] X64	Philadelphia	NPAssn	577	14 488	R	12	24	No	Req	58	
Hospital of the University of Pennsylvania +[1] [2]-X67	Philadelphia	NPAssn	710	20 680	R	12	26	No	None	77	
Hospital of the Woman's Medical College +[1] X68	Philadelphia	NPAssn	173	6,262	R	12	6	No	Req	53	10
Jefferson Medical College Hospital +[1]-X65	Philadelphia	NPAssn	696	18,355	R	12	29	No	Req	68	
Jewish Hospital +[1] [2]-x64-X68	Philadelphia	NPAssn	437	11 490	R	12	18	(232)	Req	48	25
Lankenau Hospital +[1] x65	Philadelphia	NPAssn	260	7 001	R	12	10	(233)	Req	57	
Memorial Hospital [1]	Philadelphia	NPAssn	116	3 605	R	12	4	No	Req	36	150
Mercy Douglass Hospital +[1]	Philadelphia	NPAssn	101	3 138	R	12	4	No	Req	52	100
Methodist Episcopal Hospital +[1] x65	Philadelphia	Church	235	5 019	R	12	7	No	Req	52	100
Misericordia Hospital +[1] x68	Philadelphia	Church	220	7 166	R	12	10	No	Req	37	100
Mount Sinai Hospital +[1] [2]-X64-x65	Philadelphia	NPAssn	259	7 905	R	12	12	No	Req	71	25

Abbreviations and other references will be found on pages 398 and 399

Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
PENNSYLVANIA—*Continued*											
Nazareth Hospital +[1]	Philadelphia	Church	150	6 759	R	12	4	No	Req	43	150
Pennsylvania Hospital +[1] [3]-X65-67	Philadelphia	NPAssn	430	10 442	R	12	18	(234)	Req	81	
Philadelphia General Hospital +[1] [3]-X65-66-67-68	Philadelphia	City	2 500	19 867	R	12 24	112	(235)	Req	55	50
Presbyterian Hospital +[1] x67	Philadelphia	Church	340	7 377	R	12	10	No	Req	67	
St. Agnes Hospital x64-65	Philadelphia	Church	250	7 860	R	12	7	No	Req	24	175
St Joseph s Hospital +[1]-x65	Philadelphia	Church	200	5 909	R	12	6	No	Req	43	150
St. Luke s and Children s Medical Center +[1]-x64-65	Philadelphia	NPAssn	281	6 692	R	12	9	No	Req	34	75
St. Mary s Hospital +	Philadelphia	Church	230	6 910	R	12	6	No	Req	33	200
Temple University Hospital +[1]-X66	Philadelphia	NPAssn	543	15 129	R	12	10	(236)	Req	51	25
Woman s Hospital +[1]-X68	Philadelphia	NPAssn	137	4 485	R	12	6	No	Req	49	50
Allegheny General Hospital +[1]-X69	Pittsburgh	NPAssn	554	12 583	R	12	16	No	Req	24	100
Mercy Hospital +[1]-X69	Pittsburgh	Church	654	14 45	R	12	24	(237)	Req	27	50
Montefiore Hospital +[1]	Pittsburgh	NPAssn	221	7 712	R	12	10	No	Req	55	25
Pittsburgh Hospital +[1]	Pittsburgh	NPAssn	225	6 588	R	12	6	No	Req	30	100
Presbyterian Hospital +[1] X69	Pittsburgh	NPAssn	350	7 977	R	12	20	(238)	Req	33	25
St Francis Hospital +[1]-X69	Pittsburgh	NPAssn	690	15 109	R	12	15	(239)	Req	30	150
St. John s General Hospital [1]	Pittsburgh	NPAssn	197	7 198	R	12	5	No	Req	16	250
St. Joseph s Hospital and Dispensary	Pittsburgh	Church	170	5 012	R	12	5	No	Req	47	100
St Margaret Memorial Hospital +[1]	Pittsburgh	Church	121	3,257	R	12	4	No	Req	40	150
Shadyside Hospital [1]	Pittsburgh	NPAssn	301	8 369	R	12	8	No	Req	14	200
South Side Hospital +[1]	Pittsburgh	NPAssn	207	5 870	R	12	8	No	Req	42	100
Western Pennsylvania Hospital +[1] [3]	Pittsburgh	NPAssn	542	13 636	R	12	18	No	Req	25	100
Community General Hospital [1]	Reading	NPAssn	123	4 032	R	12	4	No	Req	46	150
Reading Hospital +[1] [3]	Reading	NPAssn	389	10 811	R	12	10	No	Req	65	100
St. Joseph s Hospital +[1]	Reading	Church	206	6 873	R	12	6	No	Req	60	200
Rochester General Hospital [1]	Rochester	NPAssn	138	4 873	R	12	2	No	Req	14	50
Robert Packer Hospital +	Sayre	NPAssn	304	10 507	R	12	10	No	Req	64	50
Moses Taylor Hospital [1]	Scranton	NPAssn	120	2 543	R	12	3	(240)	Req	19	173
Scranton State Hospital +[1]	Scranton	State	290	6 405	R	12	8	No	Req	26	123.50
Sewickley Valley Hospital [1]	Sewickley	NPAssn	134	5 754	R	12	6	No	Req	23	200
Uniontown Hospital [1]	Uniontown	NPAssn	270	9,210	R	12	5	No	Req	41	200
Washington Hospital +[1]	Washington	NPAssn	201	6 347	R	12	5	No	Req	27	150
Mercy Hospital +[1]	Wilkes-Barre	Church	194	5 480	R	12	6	No	Req	24	100
Wilkes Barre General Hospital +[1]	Wilkes Barre	NPAssn	362	9 686	R	12	10	No	Req	27	50
Columbia Hospital +[1]	Wilkinsburg	Church	189	5 903	R	12	5	No	Req	21	150
Williamsport Hospital +[1] [3]	Williamsport	NPAssn	289	8 848	R	12	7	No	Req	36	125
York Hospital +	York	NPAssn	238	8,293	R	12	8	No	Req	34	100
RHODE ISLAND											
Newport Hospital	Newport	NPAssn	189	4 383	M	12	2	No	Req	23	100
Memorial Hospital [1]	Pawtucket	NPAssn	172	7 513	R	12	6	No	Req	35	50
Rhode Island Hospital +[1] [3]	Providence	NPAssn	569	15 691	R	24	12	(241)	Req	59	
Roger Williams General Hospital +[1]	Providence	NPAssn	162	6 377	R	12	5	No	Req	31	100
St. Joseph s Hospital	Providence	Church	310	8 047	R	12	10	(242)	Req	45	100
SOUTH CAROLINA											
Roper Hospital +[1] X70	Charleston	NPAssn	450	13 405	R	12	15	No	Req	50	50
Columbia Hospital +[1]	Columbia	County	442	12 036	R	12	14	No	Req	36	100
McLeod Infirmary [1]	Florence	NPAssn	200	7 507	R	12	5	(243)	Req	28	100
Greenville General Hospital +[1]	*Greenville*	CyCo	325	12 678	R	12	15	No	Req	17	100
Orangeburg Regional Hospital +[1]	Orangeburg	City	203	5 046	R	12	4	No	Req	22	100
Spartanburg General Hospital +[1]	Spartanburg	County	293	12 434	R	12	10	No	Req	20	100
SOUTH DAKOTA											
McKennan Hospital [1] x71	Sioux Falls	Church	164	7 495	R	12	4	No	None	55	50
Sioux Valley Hospital [1] x71	Sioux Falls	NPAssn	190	7 734	R	12	6	No	Req	34	100
Sacred Heart Hospital [1]-X71	Yankton	Church	230	5 686	R	12	7	No	Req	30	150
TENNESSEE											
Baroness Erlanger Hospital +[1] [3]	Chattanooga	CyCo	449	16,379	RM	12	16	(244)	Req	28	60
East Tennessee Baptist Hospital [1]	Knoxville	Church	216	8 964	R	12	4	No	None	18	125
Fort Sanders Hospital [1]	Knoxville	NPAssn	200	7 432	R	12	6	(245)	Req	29	200
Knoxville General Hospital +[3]	Knoxville	City	285	9 301	R	12	10	No	Req	44	75
St. Mary s Memorial Hospital [1]	Knoxville	Church	250	7 462	R	12	8	No	None	36	200
Baptist Memorial Hospital +[1]	Memphis	Church	500	20 824	R	12	24	No	Req	34	50
John Gaston Hospital +[1] [1]-X72 x75	Memphis	City	534	22,503	R S	12	32	(246)	Req	61	25
Methodist Hospital +	Memphis	Church	266	13 424	R	12	8	(247)	None	29	50
St Joseph Hospital +[1]	Memphis	Church	280	11 216	R	12	8	No	Req	33	75
George W Hubbard Hospital of Meharry Medical College +[1] [1]-X73	Nashville	NPAssn	200	4 878	R	12	8	No	None	47	25
Mid-State Baptist Hospital +[1]	Nashville	NPAssn	115	5 674	R	12	4	No	Req	23	125
Nashville General Hospital +[1]	Nashville	City	221	6 007	R-S	12	11	No	Req	31	75
St. Thomas Hospital +[1]	Nashville	Church	235	10 199	S	12	7	(248)	None	37	100
Vanderbilt University Hospital +[1]-X74	Nashville	NPAssn	352	10 688	S	12	21	(249)	Req	53	
TEXAS											
Brackenridge Hospital +[1]	Austin	City	237	6 925	R	12	8	No	Req	27	50
Memorial Hospital [1]	Corpus Christi	CyCo	148	7 519	R	12	5	No	Req	25	100
Baylor University Hospital +[1] X75	Dallas	Church	745	18 533	R-S	12	36	No	Req	33	37.50
Methodist Hospital +[1]-x75	Dallas	Church	208	11 352	R-S	12	5	No	Req	26	75
Parkland Hospital +[1] [3] X75	Dallas	CyCo	357	8 879	M-S	12	16	No	Req	43	10
St Paul s Hospital +[1]-X75	Dallas	Church	350	13 521	R-S	12	11	No	Req	33	50
El Paso General Hospital	El Paso	CyCo	200	3 199	R	12	5	No	Req	35	100
City County Hospital +[1]	Fort Worth	CyCo	168	4 984	R	12	7	No	Req	33	50
Harris Hospital +[1]	Fort Worth	Church	308	14 111	R	12	11	No	Req	30	100
St. Joseph s Hospital +[1]	Fort Worth	Church	311	13 704	R	12	8	No	Req	15	150
University of Texas Medical Branch Hospitals +[1] [3] X76	Galveston	State	692	10 576	R	12	18	No	Req	77	25
Hermann Hospital +[1]-x77	Houston	NPAssn	625	19 265	R	12	11	No	Req	45	50
Jefferson Davis Hospital +[1] [1]-X77	Houston	CyCo	441	13 611	R	12	24	No	Req	50	25
Methodist Hospital +[1]-x77	Houston	Church	135	5 331	R	12	8	No	Req	63	50
St. Joseph s Infirmary +x76-77	Houston	Church	434	21 752	R	12	10	No	Req	47	75
Baptist Memorial Hospital +[1]	San Antonio	Church	235	12 684	R	12	9	No	Req	35	75
Robert B Green Memorial Hospital +[1]	San Antonio	CyCo	170	3 672	R	12	12	No	Req	43	100
Santa Rosa Hospital +	San Antonio	Church	325	13 462	R	12	13	No	Req	23	100
Kings Daughters Hospital +[1]	Temple	NPAssn	110	2 759	R	12	4	No	Req	51	150
Scott and White Memorial Hospital +[1]	Temple	NPAssn	236	7 454	R	12	8	(252)	Req	34	100
Wichita Falls Clinic Hospital +	Wichita Falls	Part	102	5 360	R	12	3	No	Req	33	150

Abbreviations and other references will be found on pages 398 and 399

Name of Hospital	Location	Control	Total Beds	Number Patients Admitted	Type of Internship	Length of Program (Months)	Number of Internships	Affiliated Service	Outpatient Service	Autopsy Percentage	Beginning Stipend (Month)
UTAH											
St Benedict s Hospital	Ogden	Church	170	5,387	R	12	4	No	Req	52	75
Thomas D Dee Memorial Hospital +[1] x78	Ogden	Church	281	8 553	R	12	12	(253)	Req	58	100
Dr W H Groves Latter Day Saints Hospital +[1]-x78	Salt Lake City	Church	352	15 998	R	12	11	No	Req	41	100
Holy Cross Hospital +[1]	Salt Lake City	Church	187	8,269	R	12	4	No	Req	45	50
St Mark s Hospital +[1]	Salt Lake City	Church	214	8 032	R	12	6	No	Req	28	50
Salt Lake County General Hospital +[1] X78	Salt Lake City	County	248	4 114	RMS	12	17	No	Req	66	25
VERMONT											
Bishop De Goesbriand Hospital +[1] 3-X79	Burlington	Church	200	5 028	R	12	6	No	Req	52	100
Mary Fletcher Hospital +[1] 1-X79	Burlington	NPAssn	193	5 555	R	12	10	No	Req	65	50
VIRGINIA											
Alexandria Hospital +[1]	Alexandria	NPAssn	170	6 732	R	12	4	No	Req	45	75
University of Virginia Hospital +[1]	Charlottesville	State	490	13 533	R-S	12	30	(255)	Req	53	25
Lynchburg General Hospital [1]	Lynchburg	City	140	5 849	R	12	4	No	Req	31	50
Riverside Hospital +[1]	Newport News	NPAssn	155	6 104	R	12	5	No	Req	45	125
De Paul Hospital +[1]	Norfolk	Church	259	8 856	R	12	6	No	None	60	100
Norfolk General Hospital +[1]	Norfolk	NPAssn	340	9 386	R	12	7	No	Req	40	100
Johnston Willis Hospital +[1]	Richmond	Corp	225	8,208	R	12	5	No	Req	50	150
Medical College of Virginia Hospital Division +[1] 3-X80 (Memorial Dooley and St Philip Hospitals)	Richmond	State	837	20 622	R	12-24	36	(256)	Req	42	
Stuart Circle Hospital [1]	Richmond	Corp	114	4 735	R	12	4	No	Req	47	150
Jefferson Hospital +[1]	Roanoke	Corp	150	5 707	R	12	3	No	Req	34	150
Lewis Gale Hospital +[1]	Roanoke	Corp	180	6 667	R	12	4	No	Req	50	75
Memorial and Crippled Children s Hospital [1]	Roanoke	NPAssn	130	5,548	R	12	4	No	None	30	100
Winchester Memorial Hospital [1]	Winchester	NPAssn	200	6 554	R	12	4	No	Req	43	100
WASHINGTON											
Columbus Hospital [1]	Seattle	Church	175	4 387	R	12	4	(257)	None	37	75
Doctors Hospital +	Seattle	NPAssn	200	8 911	R	12	4	No	None	67	75
King County Hospital Unit No 1 (Harborview) +[1] 3-X81	Seattle	County	560	10 604	R S	12	24	No	Req	67	70
Providence Hospital +[1]	Seattle	Church	350	12 381	R	12	8	(258)	Req	58	75
Seattle General Hospital [1]	Seattle	NPAssn	124	5 006	R	12	4	(259)	Req	30	75
Swedish Hospital +[1]	Seattle	NPAssn	330	13 923	R	12	16	(259)	Req	54	50
Virginia Mason Hospital +[1]	Seattle	NPAssn	207	9 585	R	12	8	(259)	None	73	50
Deaconess Hospital +[1]	Spokane	Church	213	9 500	R	12	6	No	None	50	100
Sacred Heart Hospital +[1]	Spokane	Church	500	17 023	R	12	12	No	Req	34	100
St. Luke s Hospital +[1]	Spokane	NPAssn	265	8 291	R	18	6	(261)	None	57	100
Pierce County Hospital [1]	Tacoma	County	226	4 416	R	12	10	No	Req	57	100
St. Joseph s Hospital +[1]	Tacoma	Church	285	12 426	R	12	4	No	Req	60	100
Tacoma General Hospital +[1]	Tacoma	NPAssn	213	11 448	R	12	5	No	None	34	125
WEST VIRGINIA											
Bluefield Sanitarium	Bluefield	Corp	160	8 122	R	12	4	No	Req	25	100
Charleston General Hospital +[1]	Charleston	NPAssn	240	8 663	R	12	9	No	Req	62	125
Kanawha Valley Hospital +[1]	Charleston	Corp	146	4 997	R	12	2	No	Req	32	130
St Mary s Hospital +[1]	Huntington	Church	300	13 445	R	12	6	No	Req	41	100
Camden Clark Memorial Hospital [1]	Parkersburg	City	160	5 820	R	12	4	No	None	28	150
St. Joseph s Hospital +[1]	Parkersburg	Church	170	6 997	R	12	3	No	None	34	100
Ohio Valley General Hospital +[1]	Wheeling	NPAssn	330	10 174	R	12	8	No	Req	14	100
Wheeling Hospital [1]	Wheeling	Church	250	9 564	R	12	4	No	Req	26	100
WISCONSIN											
Luther Hospital [1] x82	Eau Claire	NPAssn	179	7 172	R	12	4	No	None	37	50
St. Agnes Hospital	Fond du Lac	Church	300	9 341	R	12	2	No	None	30	125
Mercy Hospital [1] x82	Janesville	Church	200	4 335	R	12	5	No	None	41	150
La Crosse Lutheran Hospital +[1]	La Crosse	Church	140	5 403	R	12	4	No	Req	46	100
St Francis Hospital [1] x82	La Crosse	Church	308	8,335	R	12	6	No	Req	33	100
Madison General Hospital +[1]	Madison	NPAssn	177	7 616	R	12	6	No	None	46	50
Methodist Hospital +[1]	Madison	Church	132	4,870	R	12	4	No	Req	57	90
St. Mary s Hospital +[1]	Madison	Church	230	8 134	R	12	6	No	None	40	125
State of Wisconsin General Hospital +[1] X82	Madison	State	750	15 178	R	12	20	No	None	73	
St Joseph s Hospital +[1] x82	Marshfield	Church	250	6 625	R	12	4	No	Req	40	200
Columbia Hospital +[1]	Milwaukee	NPAssn	160	5 480	R	12	7	No	Req	63	45
Evangelical Deaconess Hospital +[1]	Milwaukee	Church	138	7,210	R	12	6	No	Req	49	125
Milwaukee Children s Hospital +[1] X83	Milwaukee	NPAssn	150	5 075	S	12	2	(267)	Req	76	50
Milwaukee County Hospital +[1] X83	Milwaukee	County	868	22,503	R	12	40	(262)	Req	38	25
Milwaukee Hospital +[1] x83	Milwaukee	Church	271	9 972	R	12	7	No	None	91	50
Misericordia Hospital	Milwaukee	Church	110	4 647	R	12	3	No	None	35	150
Mount Sinai Hospital +[1]	Milwaukee	NPAssn	184	8 411	R	12	6	No	Req	46	65
St Joseph Hospital + x83	Milwaukee	Church	370	13 794	R	12	10	No	None	43	75
St Luke s Hospital +[1]	Milwaukee	Church	135	7 408	R	12	13	No	None	31	150
St. Mary s Hospital +[1]	Milwaukee	Church	210	7 963	R	12	5	No	None	58	75
St. Michael Hospital [1]	Milwaukee	Church	137	4 667	R	12	4	No	Req	28	150
Theda Clark Memorial Hospital [1]	Neenah	NPAssn	170	5 073	M	12	2	No	None	24	100
Mercy Hospital [1]	Oshkosh	Church	210	7 716	R	12	4	No	None	32	100
St Mary s Hospital [1]	Racine	Church	211	7 881	R	12	4	No	None	36	
St Mary s Hospital [1] x82	Wausau	Church	240	9,228	R	12	4	No	Req	46	
HAWAII											
Kuakini Hospital [1]	Honolulu	NPAssn	115	5 062	R	12	3	No	Req	17	50
Queen s Hospital +[1]	Honolulu	NPAssn	384	12 853	R	12	12	No	Req	82	50
St Francis Hospital [1]	Honolulu	Church	213	7 504	R	12	6	No	Req	52	75
PUERTO RICO											
Bayamon District Hospital +[1]	Bayamon	Fed	261	6 943	R	12	4	No	Req	58	75
Fajardo District Hospital [1]	Fajardo	State	305	5 190	R	12	5	(264)	Req	41	75
Clinica Quirurgica Dr Pila [1]	Ponce	NPAssn	186	3 589	R	12	5	No	Req	19	100
Presbyterian Hospital [1]	San Juan	Church	114	4 629	R	12	5	No	Req	29	50
San Juan City Hospital +[1]	San Juan	City	330	9 891	R	12	12	No	Req	32	75

Abbreviations and other references will be found on pages 398 and 399

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

The following list of hospitals which conform to the standards of the Canadian Medical Association is published for the information of graduates interested in an internship appointment in a Canadian hospital. The Council considers that hospitals which are unqualifiedly approved as conforming to the standards of the Canadian Medical Association may be considered as offering internships equivalent in educational value to those in hospitals approved for intern training by the Council. This does not apply however to that group of hospitals referred to as Commended under the Canadian plan

The following list of hospitals revised to July 1 1951 has been furnished by the Canadian Medical Association

Name of Hospital	Location
Camp Hill Hospital	Halifax, N S.
Halifax Infirmary	Halifax N S.
Victoria General Hospital	Halifax N S
St. John General Hospital	St John N B
Saint Sacrement Hospital	Quebec Que
Hospital Dieu de Quebec	Quebec Que
Hospital of the Infant Jesus	Quebec Que
Jeffrey Hale's Hospital	Quebec Que
Veterans Hospital	Quebec Que
Children's Memorial Hospital	Montreal Que
Herbert Reddy Mem Hospital	Montreal Que.
Homeopathic Hospital	Montreal Que
Hospital Notre Dame	Montreal Que
Hospital Ste Jeanne d'Arc	Montreal Que
Hospital Ste Justine	Montreal Que
Hotel Dieu de Montreal	Montreal Que
Hospital Ste Luc	Montreal Que
Jewish General Hospital	Montreal Que
Montreal General Hospital	Montreal Que
Queen Mary Veterans Hospital	Montreal Que
Royal Victoria Hospital	Montreal Que.
St Mary's Hospital	Montreal Que
Ste Anne's Hospital.	Ste Anne de Bellevue Que
Brantford General Hospital	Brantford Ont.
Hamilton General Hospital	Hamilton Ont.
St. Joseph's Hospital	Hamilton Ont
St. Joseph's Hospital	London Ont.
Victoria Hospital	London Ont
Westminster Hospital	London Ont.
Oshawa General Hospital	Oshawa Ont.
Ottawa Civic Hospital	Ottawa Ont
Ottawa General Hospital	Ottawa Ont.
Kitchener Waterloo Hospital	Kitchener Ont.
Hotel Dieu Hospital	Kingston Ont.
Kingston General Hospital	Kingston Ont
St Catherines Gen Hospital	St Catharines Ont.
Sunnybrook Hospital	Toronto Ont
Hospital for Sick Children	Toronto Ont
Mount Sinai Hospital	Toronto Ont.
St. Joseph's Hospital	Toronto Ont.
St Michael's Hospital	Toronto Ont
Toronto East General Hospital	Toronto Ont
Toronto General Hospital	Toronto Ont.
Toronto Western Hospital	Toronto Ont
Wellesley Hospital	Toronto Ont.
Women's College Hospital	Toronto Ont.
Grace Hospital	Windsor Ont.
Metropolitan Hospital	Windsor Ont
Hotel Dieu of St Joseph	Windsor Ont.
Children's Hospital	Winnipeg, Man.
Deer Lodge Hospital	Winnipeg Man.
Misericordia Hospital	Winnipeg Man.
Winnipeg General Hospital	Winnipeg Man.
St Boniface Hospital	St. Boniface Man.
Regina General Hospital	Regina, Sask.
Regina Grey Nun's Hospital	Regina Sask.
St. Paul's Hospital	Saskatoon Sask.
Saskatoon City Hospital	Saskatoon Sask.
Calgary General Hospital	Calgary Alta.
Colonel Belcher Hospital	Calgary Alta.
Holy Cross Hospital	Calgary Alta.
Edmonton General Hospital	Edmonton, Alta.
Misericordia Hospital	Edmonton Alta.
Royal Alexandra Hospital	Edmonton, Alta.
University of Alberta Hospital	Edmonton Alta.
Royal Columbian Hospital	New Westminster B C
St Paul's Hospital	Vancouver B C
Shaughnessy Hospital	Vancouver B C
Vancouver General Hospital	Vancouver B C
Royal Jubilee Hospital	Victoria B C
St Joseph's Hospital	Victoria B C.
Veterans Hospital	Victoria, B C
St. John's General Hospital	St John's N F

ABBREVIATIONS AND NOTES

1 Women interns admitted
2 Women interns only
3 Dental interns employed
4 Male patients only

CyCo	City and County
Corp	Corporation unrestricted as to profit
NPAssn	Nonprofit association
Part	Partnership
Op	Optional
Req	Required
R	Rotation
M	Mixed
S	Straight

+ The plus sign indicates additional approval for residencies in specialties as shown in the Council's list of Approved Residences and Fellowships for Veteran and Civilian Physicians

Medical School Affiliations

Footnotes 10 to 83 refer to medical schools affiliated with hospitals for undergraduate clinical clerkships

Hospitals have been identified with symbol X when a medical school has indicated that the hospital is a major unit in the school's teaching program Hospitals have been identified with symbol x when a medical school has indicated that the hospital is used to a limited extent in the school's teaching program.

10 Medical College of Alabama Birmingham Ala.
11 University of Arkansas School of Medicine Little Rock Ark
12 University of California School of Medicine San Francisco Calif
13 College of Medical Evangelists Loma Linda Los Angeles Calif
14 University of Southern California School of Medicine Los Angeles, Calif
15 Stanford University School of Medicine Stanford University San Francisco Calif
16 University of Colorado School of Medicine Denver Colo
17 Yale University School of Medicine New Haven Conn
18 Georgetown University School of Medicine Washington D C
19 George Washington University School of Medicine Washington D C
20 Howard University College of Medicine Washington D C
21 Emory University School of Medicine Atlanta, (Emory University) Ga
22 Medical College of Georgia Augusta Ga
23 Chicago Medical School Chicago Ill.
24 Northwestern University Medical School Chicago Ill.
25 University of Chicago School of Medicine Chicago Ill
26 University of Illinois College of Medicine Chicago Ill
27 Stritch School of Medicine of Loyola University Chicago Ill.
28. Indiana University School of Medicine Bloomington Indianapolis Ind.
29 State University of Iowa College of Medicine Iowa City Iowa
30 University of Kansas School of Medicine Lawrence-Kansas City Kan.
31 University of Louisville School of Medicine Louisvillle Ky
32 Louisiana State University School of Medicine New Orleans, La.
33 Tulane University of Louisiana School of Medicine New Orleans La
34 Johns Hopkins University School of Medicine Baltimore Md
35 University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore Md
36 Boston University School of Medicine Boston Mass.
37 Harvard Medical School Boston Mass
38 Tufts College Medical School Boston Mass
39 University of Michigan Medical School Ann Arbor Mich
40 Wayne University College of Medicine Detroit, Mich.
41 University of Minnesota Medical School Minneapolis Minn
42 St. Louis University School of Medicine St. Louis Mo
43 Washington University School of Medicine St. Louis Mo
44 Creighton University School of Medicine Omaha Neb
45 University of Nebraska College of Medicine Omaha, Neb
46 Dartmouth Medical School Hanover N H.
47 Albany Medical College Albany N Y
48 University of Buffalo School of Medicine Buffalo N Y
49 Columbia University College of Physicians and Surgeons New York N Y
50 Cornell University Medical College New York N Y
51 New York Medical College, Flower and Fifth Avenue Hospitals New York N Y
52. New York University College of Medicine New York N Y
53 State University of New York College of Medicine at New York City Brooklyn N Y
54. University of Rochester School of Medicine and Dentistry Rochester N Y
55 State University of New York at Syracuse College of Medicine, Syracuse N Y
56 University of North Carolina Raleigh N C
57 Duke University School of Medicine Durham N C
58. Bowman Gray School of Medicine of Wake Forest College Winston Salem N C
59 University of Cincinnati College of Medicine Cincinnati, Ohio
60 Western Reserve University School of Medicine Cleveland Ohio
61 Ohio State University College of Medicine Columbus Ohio
62 University of Oklahoma School of Medicine Oklahoma City Okla.
63 University of Oregon Medical School, Portland Ore
64 Hahnemann Medical College and Hospital of Philadelphia Philadelphia, Pa.
65 Jefferson Medical College of Philadelphia Philadelphia Pa.
66 Temple University School of Medicine Philadelphia, Pa.
67 University of Pennsylvania School of Medicine Philadelphia Pa.
68 Woman's Medical College of Pennsylvania Philadelphia Pa.
69 University of Pittsburgh School of Medicine Pittsburgh Pa.
70 Medical College of the State of South Carolina Charleston S C
71. University of South Dakota Pierre S D
72 University of Tennessee College of Medicine Memphis, Tenn
73 Meharry Medical College Nashville Tenn
74 Vanderbilt University School of Medicine Nashville Tenn
75 Southwestern Medical School of the University of Texas Dallas Tex
76 University of Texas School of Medicine Galveston Tex.
77 Baylor University College of Medicine Houston Tex.
78. University of Utah School of Medicine Salt Lake City Utah
79 University of Vermont College of Medicine Burlington Vt
80 Medical College of Virginia, Richmond Va
81 University of Washington School of Medicine Seattle Wash
82 University of Wisconsin Medical School Madison Wis.
83 Marquette University School of Medicine Milwaukee Wis.

Affiliations as Referred to in Column Headed "Affiliated Service"

100. Maricopa County Hospital
101 Arkansas Children's Hospital Ped.
102. Los Angeles County Hospital
103. Children's Hospital
104 Children's Hospital Casualty Hospital
105 Grady Mem'l Hospital, Atlanta Ga
106 Holy Cross Hospital Chicago Ob-Gyn
107 Winfield Sanatorium
108 Chicago Maternity Hospital Children's Memorial Hospital
109 Broadlawns-Polk City Hospital
110 Children's Mercy Hospital, Kansas City Mo
111 St Joseph Infirmary and Louisville General Hospital
112 Johns Hopkins Hospital
113 St. Elizabeth's Hospital Brighton Mass
114 Wesson Maternity Hospital
115 University Hospital
116 Pontiac State Hospital Oakland County Tuberculosis Sanitorium
117 University Hospital Ann Arbor Mich
118 Maricopa City Hospital
119 Pima City and Veterans Administration Hospitals
120 Pima County Hospital
121 Harbor Gen'l Hospital and Long Beach Gen'l Hospital
122 Harbor Gen'l Hospital
123 Santa Monica Hospital
124 Children's Hospital
125 Children's Hospital County Hospital White Mem'l Hospital
126 Children's Hospital
127 Fairmont Hospital
128. Women's Hospital
129 Mary's Help Hospital St Luke's Hospital
130 San Francisco Hospital, Obst.
131 Children's Hospital, Ped
132. Santa Barbara Gen'l Hospital
133 California Hospital L A.
134 Colorado Gen'l Hospital
135 Boulder-Colorado Sanitarium and Hospital Boulder City Hospital
136 Bellevue Medical Center
137 J J McCook Mem'l Hospital
138 Southbury Training School Ped.
139 Gallinger Municipal Hospital, Children's Hospital
140 Prince George's Gen'l Hospital Arlington Hospital
141 Gallinger Municipal Hospital
142 Grady Memorial Hospital
143 University Hospital Augusta Ga. Ob-Gyn
144 Municipal Contagious for Medical Pediatrics
145 Mercy Hospital
146 University Hospital
147 Harbor Gen'l Torrance Cal. and Los Angeles City Gen'l Hospital Los Angeles
148 Winfield Hospital
149 Children's Mem'l Hospital Lake City Tuberculosis Sanitorium
150 Children's Mem'l Hospital and Chicago Maternity Hospital
151 Children's Mem'l Hospital Municipal Tuberculosis Sanitarium, Chicago
152. Winnebago County Hospital
153. Riley Hospital
154 Indianapolis Gen'l Hospital
155 Sedgwick County Hospital
156 Children's Hospital and Waverly Hills T B Sanatorium
157 Our Lady of Peace Louisville
158 Central Louisiana State Hospital
159 Johns Hopkins University Hospital
160 University Hospital
161 Chapin Hospital, Providence R. I
162 Peter Bent Brigham New England Deaconess Hospitals
163 Haynes Mem'l Hospital
164 Framingham Union Boston City Hospitals
165 Eastern Maine Gen'l, Bangor Maine Central Maine Gen'l Lewiston Maine Boston Floating Hospital Boston Dispensary Boston
166. Haynes Mem'l Hospital
167 *Redford Branch and Herman Kiefer Hospital*
168 Children's Hospital
169 Receiving Hospital Herman Kiefer Hospital
170 Herman Kiefer Detroit University Hospital Ann Arbor Mich
171 Herman Kiefer Contagious St. Joseph's Retreat, Psych.
172. Grace Hospital Obstetrics
173 Children's Hospital Receiving Hospital
174 Herman Kiefer Hospital Woman's Hospital
175 Michigan Veteran Facility Mary Free Bed Con. Home Evangeline Home Cancer Detection Center
176 Ingham County T B Sanitarium
177 Pontiac State Hospital Oakland City T B Sanitarium Oakland City Contagious Hospital University of Michigan Graduate Training Program
178. Miller Mem'l Hospital
179 University Hospital
180 Minneapolis Gen'l Hospital
181 Children's Hospital St Paul Minn
182 *Gillette Hospital*
183 Mississippi Tubercular Sanatorium
184 Children's Memorial Hospital
185 Douglas County Hospital
186 Children's and Douglas County Hospitals
187 Douglas County Hospital and St Bernard's Council Bluffs Iowa
188 Mercy Hospital Kansas City Mo Pediatrics
189 Children's Mercy
190 Children's Mem'l Hospital Nebraska Psych Unit, Douglas County Hospital
191 Children's Seashore Home, Betty Bacharach Home Clyde Fish Mem'l Hospital Atlantic City Municipal Hospital
192 St. Elizabeth Hospital
193 Berthold S Pollak Hospital Margaret Hague Maternity Hospital
194 Margaret Hague Maternity Hospital
195 St. Louis Maternity St. Louis City and St. Louis Children's Hospitals
196 Brady Maternity Hospital
197 Robert Koch Hospital, City Hospital Max C Starkloff (isolation) St Mary's Infirmary
198 Alexian Bros. Hospital and City Hospital
199 City Hospital, Isolation
200 Kingston Ave. Hospital, Chronic Home for Aged
201 Brooklyn Thoracic Hospital
202 Children's Hospital
203 E J Meyer Mem'l Hospital Obstetrics
204 University of Maryland Hospital
205 Chemung County T B Sanatorium
206 Bellevue Medical Center
207 Goldwater Mem'l Hospital University Hospital, Institute of Phy Med. and Rehabilitation Phy Med. and Rehabilitation
208 University Beckman Downtown Gouverneur and Easton Hospitals
209 New York University Basic Sciences
210 Beth Isreal Hospital, Obstetrics
211 Willard Parker and Bellevue Hospitals
212 Park Avenue and Geneva General
213. Geneseo Hospital Highland Hospital, Rochester F F Thompson Hospital Canandaigua New York
214 Misericordia Hospital, New York City Ob-Ped
215 University Crouse Irving Memorial Psychopathic City Hospitals
216 Children's Hospital, Akron, Ohio
217 Children's Hospital, Cincinnati Pediatrics
218 Chronic Disease Hospital and Durham Hospital
219 Cincinnati Gen'l Hospital
220 St Ann Maternity Hospital
221 Mt. Sinai Hospital
222 Children's Hospital, Columbus Ohio
223 Children's and St. Francis Hospitals
224 Lima State Hospital Psych
225 Children's Columbus Ohio Maumee Valley Hospital Toledo Ohio
226 University Hospital
227 University Mercy St. Anthony and Wesley Hospitals
228 City Isolation Hospital and Shriners Hospital for Crippled Children
229 St. Joseph's Hospital, Vancouver Washington Obstetrics
230 Providence Hospital Ped.
231 University Hospitals Obstetrics
232 Municipal Hospital for Contagious Diseases
233 Children's Hospital of the Mary J Drexel Home
234 Children's Hospital Pediatrics
235 Philadelphia Hospital, Contagious Diseases
236 *St. Christopher's Hospital for Children*
237 Rosalia Foundling
238 Eye and Ear Magee Children's Hospitals
239 Municipal Hospital
240 West Side Hospital
241 Lying-In Hospital Obstetrics
242 Chapin Hospital Contagious and Mental
243 S. C Public Health Hospital, Florence S C
244 Children's Hospital and Pine Breeze Sanatarium
245 Crippled Children's Hospital
246 Baptist and St. Joseph Hospitals
247 West Tennessee Tuberculosis Hospital Memphis E E N T Hospital
248 Vanderbilt University Hospital
249 *Nashville Gen'l Hospital Veterans Admin Hospital Nashville Tenn*
250 Memorial Corpus Christi Ob-Gyn., John Sealy Galveston Pediatrics
251 Jefferson Davis Hospital
252. Gulf Colorado and Santa Fe R. R. Ass'n Hospital
253. Salt Lake County Gen'l Utah State Tuberculosis Sanatorium
254. Salt Lake Gen'l Holy Cross Latter Day Sanitorium St Marks St. Benedicts
255 Blue Ridge Sanatorium Lynchburg Gen'l Lynchburg Va King's Daughters, Staunton Va Med only
256 U S Naval Hospital Portsmouth Va. Obst. King's Daughters Ped Clinic Norfolk Virginia
257 King County
258 Firland Sanatorium Diseases of the Chest
259 Children's Orthopedics Hospital
260 Ft. Lawton Gen'l Hospital Ft. Lawton Washington Ob-Gyn
261. Shriners Hospital for Crippled Children, Salvation Army Hospital
262 South View Hospital (City Isolation Hospital) St. Joseph's Hospital
263 Charity District Hospital, Bayamon P R Path
264 Bayamon District Hospital
265 Wesson Maternity Hospital
266 Stuart Circle St. Elizabeth's St Luke's Richmond *Northhampton Accomack* Mem'l Nassaroadox Mary Washington Fredericksburg Southside Community Farmville Raidford Mem'l, Franklin
267 Southview Hospital, Isolation
268 Gillette State Hospital for Crippled Children Ancker *Hospital—City and* County Hospitals
269 Grady Memorial Hospital

APPROVED INTERNSHIPS BY TYPE OF SERVICE

ROTATING

Number of Approved Programs 775

UNITED STATES ARMY

Army and Navy General Hospital	Hot Springs National Park Ark
Letterman Army Hospital	San Francisco
Fitzsimons Army Hospital	Denver
Army Medical Center	Washington, D C
Murphy Army Hospital	Waltham Mass
Percy Jones Army Hospital	Battle Creek Mich
Valley Forge Army Hospital	Phoenixville Pa
William Beaumont Army Hospital	El Paso Tex.
Brooke Army Hospital	San Antonio Tex.
Madigan Army Hospital	Fort Lewis Wash.
Gorgas Hospital	Ancon C Z
Tripler Army Hospital	Moanalua Honolulu T H

UNITED STATES NAVY

U S Naval Hospital	Mare Island Calif
U S Naval Hospital	Oakland Calif
U S Naval Hospital	Oceanside Calif
U S Naval Hospital	San Diego Calif
U S. Naval Hospital	Jacksonville Fla.
U S. Naval Hospital	Pensacola Fla
U S Naval Hospital	Great Lakes Ill.
U S Naval Hospital	Bethesda Mo
U S Naval Hospital	Chelsea Mass
U S Naval Hospital	St. Albans N Y
U S Naval Hospital	Philadelphia
U S Naval Hospital	Newport R I
U S Naval Hospital	Charleston, S C
U S Naval Hospital	Portsmouth Va
U S Naval Hospital	Bremerton Wash

U S PUBLIC HEALTH SERVICE

U S Public Health Service Hospital	San Francisco
U S Public Health Service Hospital	Chicago
U S Public Health Service Hospital	New Orleans La
U S Public Health Service Hospital	Baltimore
U S Public Health Service Hospital	Boston
U S Public Health Service Hospital	Detroit
U S Public Health Service Hospital	Stapleton S I N Y
U S Public Health Service Hospital	Cleveland
U S Public Health Service Hospital	Galveston, Tex.
U S Public Health Service Hospital	Norfolk Va
U S Public Health Service Hospital	Seattle

FEDERAL SECURITY AGENCY

Freedmen s Hospital	Washington D C
St Elizabeth s Hospital	Washington D C

VETERANS ADMINISTRATION

Veterans Admin Hospital	Little Rock, Ark.
Veterans Admin Hospital	Long Beach Calif
Veterans Admin Hospital	Oklahoma City Okla.
Veterans Admin Hospital	Houston Tex.

NONFEDERAL

Carraway Methodist Hospital	Birmingham Ala
Jefferson Hillman Hospital	Birmingham Ala.
Lloyd Noland Hospital	Fairfield Ala
Holy Name of Jesus Hospital	Gadsden Ala.
City Hospital	Mobile Ala.
Good Samaritan Hospital	Phoenix, Ariz
Memorial Hospital	Phoenix Ariz
St. Joseph s Hospital	Phoenix, Ariz
St. Mary s Hospital and Sanatorium	Tucson Ariz.
Tucson Medical Center	Tucson Ariz
Arkansas Baptist Hospital	Little Rock Ark.
St. Vincent Infirmary	Little Rock, Ark
University Hospital	Little Rock Ark
Herrick Memorial Hospital	Berkeley Calif
San Joaquin General Hospital	French Camp Calif
General Hospital of Fresno County	Fresno Calif
Glendale Sanitarium and Hospital	Glendale Calif
Loma Linda Sanitarium and Hospital	Loma Linda Calif
Long Beach Community Hospital	Long Beach Calif
St. Mary s Long Beach Hospital	Long Beach Calif
Seaside Memorial Hospital	Long Beach Calif
California Hospital	Los Angeles
Cedars of Lebanon Hospital	Los Angeles
Hospital of the Good Samaritan	Los Angeles
Los Angeles County Hospital	Los Angeles
Methodist Hospital of Southern California	Los Angeles
Presbyterian Hospital-Olmsted Memorial	Los Angeles
Queen of Angels Hospital	Los Angeles
Santa Fe Coast Lines Hospital	Los Angeles
White Memorial Hospital	Los Angeles
Highland Alameda County Hospital	Oakland Calif
Permanente Foundation Hospital	Oakland, Calif
Orange County General Hospital	Orange Calif
Collis P and Howard Huntington Memorial Hospital	Pasadena Calif
St. Luke Hospital	Pasadena Calif
Sacramento County Hospital	Sacramento Calif
San Bernardino County Charity Hospital	San Bernardino Calif
Mercy Hospital	San Diego, Calif
San Diego County General Hospital	San Diego Calif
Children s Hospital	San Francisco
Franklin Hospital	San Francisco
French Hospital	San Francisco
Mary s Help Hospital	San Francisco
Mount Zion Hospital	San Francisco
St Joseph s Hospital	San Francisco
St Luke s Hospital	San Francisco
St Mary s Hospital	San Francisco
San Francisco Hospital	San Francisco
Southern Pacific General Hospital	San Francisco
Santa Clara County Hospital	San Jose Calif
Santa Barbara Cottage Hospital	Santa Barbara, Calif
St. John s Hospital	Santa Monica Calif
Santa Monica Hospital	Santa Monica, Calif
Harbor General Hospital	Torrance Calif
Glockner Penrose Hospital	Colorado Springs Colo.
General Rose Memorial Hospital	Denver
Mercy Hospital	Denver
Porter Sanitarium and Hospital	Denver
Presbyterian Hospital	Denver
St Anthony Hospital	Denver
St Joseph s Hospital	Denver
St. Luke s Hospital	Denver
University of Colorado Medical Center	
Colorado General Hospital	Denver
Denver General Hospital	Denver
Corwin Hospital	Pueblo Colo
Bridgeport Hospital	Bridgeport Conn
St. Vincent s Hospital	Bridgeport, Conn
Danbury Hospital	Danbury, Conn
Greenwich Hospital	Greenwich, Conn
Hartford Hospital	Hartford Conn.
J J McCook Memorial Hospital	Hartford Conn
St. Francis Hospital	Hartford, Conn
Meriden Hospital	Meriden Conn.
Middlesex Hospital	Middletown Conn.
New Britain General Hospital	New Britain Conn
Grace-New Haven Community Hospital	
Grace Unit	New Haven Conn.
Hospital of St. Raphael	New Haven Conn.
Lawrence and Memorial Associated Hospitals	New London Conn.
Norwalk Hospital	Norwalk Conn.
William W Backus Hospital	Norwich Conn.
Stamford Hospital	Stamford Conn
St Mary s Hospital	Waterbury Conn
Waterbury Hospital	Waterbury Conn.
Delaware Hospital	Wilmington Del
Memorial Hospital	Wilmington Del
Wilmington General Hospital	Wilmington Del.
Central Dispensary and Emergency Hospital	Washington D C
Doctors Hospital	Washington D C
Gallinger Municipal Hospital	Washington D C
Garfield Memorial Hospital	Washington D C
Providence Hospital	Washington D C
Sibley Memorial Hospital	Washington, D C
Washington Sanitarium and Hospital	Washington D C
Duval Medical Center	Jacksonville Fla.
St Luke s Hospital	Jacksonville Fla.
St. Vincent s Hospital	Jacksonville Fla.
Jackson Memorial Hospital	Miami Beach Fla.
Mount Sinai Hospital	Miami Beach Fla.
St. Francis Hospital	Miami Beach Fla
Orange Memorial Hospital	Orlando Fla.
Sacred Heart Hospital	Pensacola Fla.
Tampa Municipal Hospital	Tampa Fla
St Mary s Hospital	Athens Ga.
Crawford W Long Memorial Hospital	Atlanta
Georgia Baptist Hospital	Atnalta
Piedmont Hospital	Atlanta
St Joseph s Infirmary	Atlanta
University Hospital	Augusta Ga
Columbus City Hospital	Columbus Ga.
Macon General Hospital	Macon Ga
MacNeal Memorial Hospital	Berwyn Ill
Alexian Brothers Hospital	Chicago
American Hospital	Chicago
Augustana Hospital	Chicago
Chicago Memorial Hospital	Chicago
Columbus Hospital	Chicago
Cook County Hospital	Chicago
Edgewater Hospital	Chicago
Englewood Hospital	Chicago
Evangelical Hospital	Chicago
Garfield Park Community Hospital	Chicago
Grant Hospital	Chicago
Henrotin Hospital	Chicago
Holy Cross Hospital	Chicago
Hospital of St Anthony de Padua	Chicago
Illinois Central Hospital	Chicago
Illinois Masonic Hospital	Chicago
Jackson Park Hospital	Chicago
Loyola University Hospital Group	
Loretto Hospital	Chicago
Lutheran Deaconess Hospital	Chicago
Mercy Hospital	Chicago
Michael Reese Hospital	Chicago
Mother Cabrini Memorial Hospital	Chicago
Mount Sinai Hospital	Chicago
Norwegian American Hospital	Chicago
Passavant Memorial Hospital	Chicago
Presbyterian Hospital	Chicago
Provident Hospital	Chicago
Ravenswood Hospital	Chicago
Research and Educational Hospitals	Chicago
Roseland Community Hospital	Chicago
St Anne s Hospital	Chicago
St Bernard s Hospital	Chicago
St. Elizabeth Hospital	Chicago
St. Luke s Hospital	Chicago
St. Mary of Nazareth Hospital	Chicago
South Chicago Community Hospital	Chicago
Swedish Covenant Hospital	Chicago
Walther Memorial Hospital	Chicago
Wesley Memorial Hospital	Chicago
Women and Children's Hospital	Chicago
Woodlawn Hospital	Chicago
St. Mary s Hospital	East St Louis Ill.
Memorial Hospital	Elmhurst Ill.
Evanston Hospital	Evanston Ill.
St. Francis Hospital	Evanston Ill.
Little Company of Mary Hospital	Evergreen Park, Ill.
St. Joseph s Hospital	Joliet, Ill.

NONFEDERAL—Continued

Moline Public Hospital	Moline Ill.
Oak Park Hospital	Oak Park, Ill
West Suburban Hospital	Oak Park Ill.
Methodist Hospital of Central Illinois	Peoria Ill.
St. Francis Hospital	Peoria Ill
St. Mary's Hospital	Quincy Ill.
Rockford Memorial Hospital	Rockford Ill.
St. Anthony Hospital	Rockford Ill.
Swedish American Hospital	Rockford Ill.
Memorial Hospital	Springfield Ill.
St. Catherine Hospital	East Chicago Ind.
Protestant Deaconess Hospital	Evansville Ind.
Lutheran Hospital	Fort Wayne Ind
St. Mary's Mercy Hospital	Gary Ind
St Margaret Hospital	Hammond Ind
Indianapolis General Hospital	Indianapolis
Indiana University Medical Center	Indianapolis
Methodist Hospital	Indianapolis
St. Vincent's Hospital	Indianapolis
St. Elizabeth Hospital	La Fayette Ind
St. Joseph Hospital	Mishawaka Ind
Ball Memorial Hospital	Muncie, Ind
Memorial Hospital	South Bend Ind
St. Joseph's Hospital	South Bend Ind
St. Anthony Hospital	Terre Haute Ind
Mercy Hospital	Cedar Rapids Ia
St Luke's Methodist Hospital	Cedar Rapids Ia.
Mercy Hospital	Council Bluffs Ia.
Broadlawns Polk County Hospital	Des Moines Ia
Iowa Lutheran Hospital	Des Moines Ia
Iowa Methodist Hospital	Des Moines Ia
Mercy Hospital	Des Moines Ia
University Hospitals	Iowa City
St. Joseph Mercy Hospital	Sioux City Ia
Bethany Hospital	Kansas City Kans
Providence Hospital	Kansas City Kans
St. Margaret's Hospital	Kansas City Kans
University of Kansas Medical Center	Kansas City Kans
St. Francis Hospital	Wichita Kans
Wesley Hospital	Wichita Kans
Wichita Hospital	Wichita, Kans
St. Elizabeth Hospital	Covington Ky
William Booth Memorial Hospital	Covington Ky
Good Samaritan Hospital	Lexington, Ky
Kentucky Baptist Hospital	Louisville
Louisville General Hospital	Louisville
Norton Memorial Infirmary	Louisville
St. Anthony Hospital	Louisville
St. Joseph Infirmary	Louisville
SS. Mary and Elizabeth Hospital	Louisville
Baptist Hospital	Alexandria, La
Baton Rouge General Hospital	Baton Rouge La.
Charity Hospital of Louisiana	New Orleans
Hotel Dieu-Sisters Hospital	New Orleans
Mercy Hospital-Soniat Memorial	New Orleans
Southern Baptist Hospital	New Orleans
Touro Infirmary	New Orleans
North Louisiana Sanitarium	Shreveport, La
Shreveport Charity Hospital	Shreveport, La
T E Schumpert Memorial Sanitarium	Shreveport, La.
Eastern Maine General Hospital	Bangor Me
Central Maine General Hospital	Lewiston Me
St. Mary's General Hospital	Lewiston, Me
Maine General Hospital	Portland Me.
Baltimore City Hospital	Baltimore
Bon Secours Hospital	Baltimore
Church Home and Hospital	Baltimore
Franklin Square Hospital	Baltimore
Hospital for Women	Baltimore
Lutheran Hospital	Baltimore
Maryland General Hospital	Baltimore
Provident Hospital and Free Dispensary	Baltimore
St. Agnes Hospital	Baltimore
St. Joseph's Hospital	Baltimore
Sinai Hospital	Baltimore
South Baltimore General Hospital	Baltimore
Union Memorial Hospital	Baltimore
University Hospital	Baltimore
Washington County Hospital	Hagerstown Md.
Beverly Hospital	Beverly Mass.
New England Hospital	Boston
St. Elizabeth's Hospital	Boston
Brockton Hospital	Brockton Mass
Cambridge City Hospital	Cambridge Mass.
Mount Auburn Hospital	Cambridge Mass.
Truesdale Hospital	Fall River Mass
Union Hospital	Fall River Mass.
Burbank Hospital	Fitchburg, Mass.
Holyoke Hospital	Holyoke, Mass.
Lawrence General Hospital	Lawrence, Mass.
Lowell General Hospital	Lowell Mass
St. John's Hospital	Lowell, Mass
St. Joseph's Hospital	Lowell, Mass
Lynn Hospital	Lynn Mass
St *Luke's* Hospital	New Bedford Mass
Newton Wellesley Hospital	Newton Lower Falls, Mass.
Pittsfield General Hospital	Pittsfield Mass.
St. Luke's Hospital	Pittsfield Mass.
Quincy City Hospital	Quincy, Mass.
Salem Hospital	Salem Mass.
Mercy Hospital	Springfield Mass.
Springfield Hospital	Springfield Mass.
Wesson Memorial Hospital	Springfield Mass.
Waltham Hospital	Waltham Mass.
Memorial Hospital	Worcester Mass.
St. Vincent Hospital	Worcester Mass.
Worcester City Hospital	Worcester Mass
St Joseph's Mercy Hospital	Ann Arbor Mich.
University Hospital	Ann Arbor Mich.
Leila Y Post Montgomery Hospital	Battle Creek Mich.
City of Detroit Receiving Hospital	Detroit
Detroit Memorial Hospital	Detroit
Grace Hospital	Detroit
Harper Hospital	Detroit
Jennings Memorial Hospital	Detroit
Mt. Carmel Mercy Hospital	Detroit
Providence Hospital	Detroit
St. Joseph's Mercy Hospital	Detroit
Woman's Hospital	Detroit
Wayne County General Hospital and Infirmary	Eloise Mich
Hurley Hospital	Flint Mich.
St Joseph Hospital	Flint Mich.
Blodgett Memorial Hospital	Grand Rapids Mich.
Butterworth Hospital	Grand Rapids Mich
St. Mary's Hospital	Grand Rapids Mich
Highland Park General Hospital	Highland Park Mich
Borgess Hospital	Kalamazoo Mich.
Bronson Methodist Hospital	Kalamazoo Mich.
Edward W Sparrow Hospital	Lansing Mich
St. Lawrence Hospital	Lansing Mich
Hackley Hospital	Muskegon, Mich.
Pontiac General Hospital	Pontiac Mich.
St. Joseph Mercy Hospital	Pontiac Mich
Saginaw General Hospital	Saginaw Mich.
St Luke's Hospital	Saginaw Mich
St Mary's Hospital	Saginaw Mich.
James Decker Munson Hospital	Traverse City Mich
St. Luke's Hospital	Duluth Minn
St. Mary's Hospital	Duluth Minn
Abbott Hospital	Minneapolis
Asbury Hospital	Minneapolis
Lutheran Deaconess Home and Hospital	Minneapolis
Minneapolis General Hospital	Minneapolis
Northwestern Hospital	Minneapolis
St. Mary's Hospital	Minneapolis
Swedish Hospital	Minneapolis
Ancker Hospital	St Paul
Bethesda Hospital	St. Paul
St. Joseph's Hospital	St Paul
St. Luke's Hospital	St Paul
Mississippi Baptist Hospital	Jackson Miss
Mercy Hospital Street Memorial	Vicksburg Miss
St. Louis County Hospital	Clayton Mo
Kansas City General Hospital No 1	Kansas City Mo
Kansas City General Hospital No 2	Kansas City Mo
Menorah Hospital Medical Center	Kansas City Mo
Research Hospital	Kansas City Mo
St. Joseph Hospital	Kansas City Mo
St Luke's Hospital	Kansas City Mo
St. Mary's Hospital	Kansas City Mo
Trinity Lutheran Hospital	Kansas City Mo
Missouri Methodist Hospital	St. Joseph Mo
St. Joseph's Hospital	St. Joseph Mo
Christian Hospital	St. Louis
De Paul Hospital	St Louis
Evangelical Deaconess Hospital	St. Louis
Homer G Phillips Hospital	St. Louis
Jewish Hospital	St. Louis
Lutheran Hospital	St. Louis
Missouri Baptist Hospital	St. Louis
St. Anthony's Hospital	St. Louis
St. John's Hospital	St Louis
St. Louis City Hospital	St. Louis
St. Luke's Hospital	St. Louis
St. Mary's Group of Hospitals	St. Louis
St James Hospital	Butte Mont.
Montana Deaconess Hospital	Great Falls Mont
Bryan Memorial Hospital	Lincoln Nebr
Lincoln General Hospital	Lincoln Nebr
St. Elizabeth Hospital	Lincoln Nebr
Bishop Clarkson Memorial Hospital	Omaha
Creighton Memorial-St. Joseph Hospital	Omaha
Immanuel Deaconess Institute	Omaha
Nebraska Methodist Hospital	Omaha
St. Catherine's Hospital	Omaha
University of Nebraska Hospital	Omaha
Mary Hitchcock Memorial Hospital	Hanover N H
Atlantic City Hospital	Atlantic City N.J
Bayonne Hospital and Dispensary	Bayonne N.J
Cooper Hospital	Camden N.J
West Jersey Hospital	Camden N.J
East Orange General Hospital	East Orange N.J
Alexian Brothers Hospital	Elizabeth N.J
Elizabeth General Hospital	Elizabeth, N.J
St. Elizabeth Hospital	Elizabeth N.J
Englewood Hospital	Englewood N.J
Hackensack Hospital	Hackensack N.J
St. Mary's Hospital	Hoboken N.J
Christ Hospital	Jersey City N.J
Jersey City Hospital	Jersey City N.J
St. Francis Hospital	Jersey City N.J
Monmouth Memorial Hospital	Long Branch N.J
Mountainside Hospital	Montclair N.J
Morristown Memorial Hospital	Morristown N.J
Fitkin Memorial Hospital	Neptune N.J
Hospital of St. Barnabas and For Women and Children	Newark, N.J
Newark Beth Israel Hospital	Newark, N.J
Newark City Hospital	Newark N.J
St. Michael's Hospital	Newark N.J
St. Peter's General Hospital	New Brunswick N.J
Orange Memorial Hospital.	Orange N.J
Passaic General Hospital	Passaic N.J
St. Mary's Hospital	Passaic N.J
Barnett Memorial Hospital	Patterson N.J
Paterson General Hospital	Paterson N.J
St. Joseph Hospital	Paterson N.J
Muhlenberg Hospital	Plainfield, N.J
Overlook Hospital	Summit N.J
Holy Name Hospital	Teaneck N.J
Mercer Hospital	Trenton N.J
St. Francis Hospital	Trenton N.J
William McKinley Memorial Hospital	Trenton N.J
North Hudson Hospital	Weehawken N.J
Albany Hospital	Albany N Y
Memorial Hospital	Albany N Y
St. Peter's Hospital	Albany N Y
Auburn City Hospital	Auburn N Y
Binghamton City Hospital	Binghamton N Y

NONFEDERAL—*Continued*

Beth El Hospital	Brooklyn
Bushwick Hospital	Brooklyn
Coney Island Hospital	Brooklyn
Cumberland Hospital	Brooklyn
Greenpoint Hospital	Brooklyn
Jewish Hospital	Brooklyn
Kings County Hospital	Brooklyn
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn
St Catherine's Hospital	Brooklyn
St John's Episcopal Hospital	Brooklyn
St Mary's Hospital	Brooklyn
Unity Hospital	Brooklyn
Wyckoff Heights Hospital	Brooklyn
Allied Hospital of the Sisters of Charity	Buffalo
Buffalo General Hospital	Buffalo
Deaconess Hospital	Buffalo
Edward J Meyer Memorial *Hospital*	*Buffalo*
Mercy Hospital	Buffalo
Millard Fillmore Hospital	Buffalo
Mary Imogene Bassett Hospital	Cooperstown N Y
Arnot Ogden Memorial Hospital	Elmira N Y
St Joseph's Hospital	Elmira N Y
Flushing Hospital and Dispensary	Flushing N Y
North Country Community Hospital	Glen Cove N Y
Glens Falls Hospital	Glens Falls N Y
Meadowbrook Hospital	Hempstead, N Y
Jamaica Hospital	Jamaica N Y
Mary Immaculate Hospital	Jamaica N Y
Queens General Hospital	Jamaica N Y
Charles S Wilson Memorial Hospital	Johnson City N Y
Our Lady of Victory Hospital	Lackawanna N Y
St. John's Long Island City Hospital	Long Island City N Y
Nassau Hospital	Mineola N Y
Northern Westchester Hospital	Mount Kisco N Y
Mount Vernon Hospital	*Mount Vernon, N Y*
St. Luke's Hospital	Newburgh N Y
New Rochelle Hospital	New Rochelle N Y
Beth David Hospital	New York City
Beth Israel Hospital	New York City
Bronx Hospital	New York City
Columbus Hospital	New York City
Fordham Hospital	New York City
French Hospital	New York City
Gouverneur Hospital	New York City
Harlem Hospital	New York City
Hospital for Joint Diseases	New York City
Jewish Memorial Hospital	New York City
Knickerbocker Hospital	New York City
Lebanon Hospital	New York City
Lenox Hill Hospital	New York City
Lincoln Hospital	New York City
Metropolitan Hospital	New York City
Misericordia Hospital	New York City
Morrisania City Hospital	New York City
Mother Cabrini Memorial Hospital	New York City
Mount Sinai Hospital	New York City
New York City Hospital	*New York City*
New York Infirmary	New York City
New York Polyclinic Medical School and Hospital	New York City
St Clare's Hospital	New York City
St Francis Hospital	New York City
St Vincent's Hospital	New York City
Sydenham Hospital	New York City
Mount St Mary's Hospital	Niagara Falls N Y
United Hospital	Port Chester N Y
St Francis Hospital	*Poughkeepsie N Y*
Vassar Brothers Hospital	Poughkeepsie N Y
Genesee Hospital	Rochester N Y
Highland Hospital	Rochester N Y
Rochester General Hospital	Rochester N Y
St. Mary's Hospital	Rochester N Y
Strong Memorial—Rochester Municipal Hospitals	Rochester N Y
Ellis Hospital	Schenectady N Y
St Clare's Hospital	Schenectady N Y
St Vincent's Hospital	*Staten Island N Y*
Staten Island Hospital	Staten Island N Y
Hospital of the Good Shepherd	Syracuse N Y
St Joseph's Hospital	Syracuse N Y
Syracuse Memorial Hospital	Syracuse, N Y
St Mary's Hospital	Troy N Y
Samaritan Hospital	Troy N Y
Grasslands Hospital	Valhalla N Y
St Agnes Hospital	White Plains N Y
White Plains Hospital	*White Plains N Y*
St John's Riverside Hospital	Yonkers N Y
St. Joseph's Hospital	Yonkers N Y
Yonkers General Hospital	Yonkers N Y
Charlotte Memorial Hospital	Charlotte N C
Mercy Hospital	Charlotte N C
Lincoln Hospital	Durham N C
Watts Hospital	Durham, N C
Rex Hospital	Raleigh N C
St. Agnes Hospital	Raleigh N C
James Walker Memorial Hospital	Wilmington N C
City Memorial Hospital	Winston Salem N C
Kate Bitting Reynolds Memorial Hospital	Winston-Salem N C
St. John's Hospital	Fargo N D
St. Luke's Hospital	Fargo, N D
Grand Forks Deaconess Hospital	Grand Forks, N D
City Hospital	Akron Ohio
Peoples Hospital	Akron Ohio
St. Thomas Hospital	Akron Ohio
Aultman Hospital	Canton Ohio
Mercy Hospital	Canton, Ohio
Bethesda Hospital	Cincinnati
Christ Hospital	Cincinnati
Cincinnati General Hospital	Cincinnati
Deaconess Hospital	Cincinnati
Good Samaritan Hospital	Cincinnati
Jewish Hospital	Cincinnati
St Mary's Hospital	Cincinnati
City Hospital	Cleveland
Fairview Park Hospital	Cleveland
Lutheran Hospital	Cleveland
Mount Sinai Hospital	Cleveland

St Alexis Hospital	Cleveland
St. John's Hospital	Cleveland
St Luke's Hospital	Cleveland
St. Vincent Charity Hospital	Cleveland
Doctors Hospital	Cleveland Hghts., Ohio
Grant Hospital	Columbus, Ohio
Mount Carmel Hospital	Columbus Ohio
Ohio State University Hospital	Columbus, Ohio
White Cross Hospital	Columbus Ohio
Good Samaritan Hospital	Dayton Ohio
Miami Valley Hospital	Dayton Ohio
St. Elizabeth Hospital	*Dayton Ohio*
Huron Road Hospital	East Cleveland Ohio
Marymount Hospital	Garfield Heights Ohio
Mercy Hospital	Hamilton Ohio
Lakewood Hospital	Lakewood Ohio
Lima Memorial Hospital	Lima Ohio
St Rita's Hospital	Lima, Ohio
Springfield City Hospital	Springfield Ohio
Flower Hospital	Toledo
Maumee Valley Hospital	*Toledo*
Mercy Hospital	*Toledo*
Riverside Hospital	Toledo
St. Vincent's Hospital	Toledo
Toledo Hospital	Toledo
St Elizabeth Hospital	Youngstown, Ohio
Youngstown Hospital	Youngstown Ohio
Mercy Hospital	Oklahoma City
St. Anthony Hospital	Oklahoma City
University Hospitals	*Oklahoma City*
Wesley Hospital	Oklahoma City
Hillcrest Memorial Hospital	Tulsa Ohio
St. John's Hospital	Tulsa Ohio
Sacred Heart General Hospital	Eugene Ore
Emanuel Hospital	Portland Ore.
Good Samaritan Hospital	Portland Ore.
Portland Sanitarium and Hospital	*Portland Ore*
Providence Hospital	*Portland Ore*
St. Vincent's Hospital	*Portland Ore*
University of Oregon Medical School Hospitals and Clinics	Portland Ore
Abington Memorial Hospital	Abington Pa.
Allentown Hospital	Allentown Pa.
Sacred Heart Hospital	*Allentown Pa.*
Altoona Hospital	Altoona, Pa
Mercy Hospital	Altoona, Pa
St Luke's Hospital	Bethlehem, Pa
Bryn Mawr Hospital	*Bryn Mawr Pa.*
Chester Hospital	Chester Pa.
George F Geisinger Memorial Hospital	Danville Pa
Fitzgerald Mercy Hospital	Darby Pa.
Easton Hospital	Easton Pa.
Hamot Hospital	Erie Pa.
St Vincent's Hospital	Erie Pa
Westmoreland Hospital	Greensburg Pa.
Harrisburg Hospital	Harrisburg Pa
Harrisburg Polyclinic Hospital	*Harrisburg Pa*
Conemaugh Valley Memorial Hospital	Johnstown Pa.
Nesbitt Memorial Hospital	Kingston Pa.
Lancaster General Hospital	Lancaster Pa
St Joseph's Hospital	Lancaster Pa.
McKeesport Hospital	McKeesport, Pa.
Montgomery Hospital	*Norristown Pa.*
Sacred Heart Hospital	Norristown, Pa.
Episcopal Hospital	Philadelphia
Frankford Hospital	*Philadelphia*
Germantown Dispensary and Hospital	Philadelphia
Graduate Hospital of the University of Pennsylvania	Philadelphia
Hahnemann Hospital	Philadelphia
Hospital of the University of Pennsylvania	Philadelphia
Hospital of the Woman's Medical College	Philadelphia
Jefferson Medical College Hospital	Philadelphia
Jewish Hospital	Philadelphia
Lankenau Hospital	Philadelphia
Memorial Hospital	Philadelphia
Mercy Douglass Hospital	Philadelphia
Methodist Episcopal Hospital	Philadelphia
Misericordia Hospital	Philadelphia
Mount Sinai Hospital	Philadelphia
Nazareth Hospital	*Philadelphia*
Pennsylvania Hospital	Philadelphia
Philadelphia General Hospital	Philadelphia
Presbyterian Hospital	Philadelphia
St. Agnes *Hospital*	Philadelphia
St. Joseph's Hospital	Philadelphia
St. Luke's and Childrens Medical Center	Philadelphia
St. Mary's Hospital	Philadelphia
Temple University Hospital	Philadelphia
Woman's Hospital	*Philadelphia*
Allegheny General Hospital	Pittsburgh
Mercy Hospital	Pittsburgh
Montefiore Hospital	Pittsburgh
Pittsburgh Hospital	Pittsburgh
Presbyterian Hospital	Pittsburgh
St. Francis Hospital	Pittsburgh
St. John's General Hospital	Pittsburgh
St. Joseph's Hospital and Dispensary	Pittsburgh
St. Margaret *Memorial Hospital*	Pittsburgh
Shadyside Hospital	Pittsburgh
South Side Hospital	Pittsburgh
Western Pennsylvania Hospital	Pittsburgh
Community General Hospital	Reading Pa.
Reading Hospital	Reading, Pa.
St. Joseph's Hospital	Reading, Pa.
Rochester General Hospital	Rochester Pa.
Robert Packer Hospital	Sayre Pa.
Moses Taylor *Hospital*	*Scranton Pa.*
Scranton State Hospital	Scranton Pa.
Sewickley Valley Hospital	Sewickley Pa.
Uniontown Hospital	*Uniontown Pa.*
Washington Hospital	Washington Pa.
Mercy Hospital	Wilkes-Barre Pa.
Wilkes-Barre General Hospital	Wilkes-Barre Pa.
Columbia Hospital	Wilkinsburg Pa.
Williamsport Hospital	Williamsport Pa

NONFEDERAL—Continued

York Hospital	York Pa.
Memorial Hospital	Pawtucket R.I.
Rhode Island Hospital	Providence R.I.
Roger Williams General Hospital	Providence R I.
St Joseph's Hospital	Providence, R.I
Roper Hospital	Charleston S C
Columbia Hospital	Columbia S C
McLeod Infirmary	Florence S C
Greenville General Hospital	Greenville S C
Orangeburg Regional Hospital	Orangeburg S C
Spartanburg General Hospital	Spartanburg S C
McKennan Hospital	Sioux Falls S D
Sioux Valley Hospital	Sioux Falls S.D
Sacred Heart Hospital	Yankton S.D
Baroness Erlanger Hospital	Chattanooga Tenn.
East Tennessee Baptist Hospital	Knoxville, Tenn.
Fort Sanders Hospital	Knoxville Tenn
Knoxville General Hospital	Knoxville Tenn.
St Mary's Memorial Hospital	Knoxville Tenn.
Baptist Memorial Hospital	Memphis
John Gaston Hospital	Memphis
Methodist Hospital	Memphis
St Joseph Hospital	Memphis
George W Hubbard Hospital of Meharry Medical College	Nashville, Tenn.
Mid State Baptist Hospital	Nashville Tenn
Nashville General Hospital	Nashville Tenn.
Brackenridge Hospital	Austin Tex.
Memorial Hospital	Corpus Christi Tex.
Baylor University Hospital	Dallas Tex.
Methodist Hospital	Dallas Tex.
St. Paul's Hospital	Dallas, Tex.
El Paso General Hospital	El Paso Tex.
City County Hospital	Fort Worth Tex.
Harris Hospital	Fort Worth Tex.
St. Joseph's Hospital	Fort Worth, Tex.
University of Texas Medical Branch Hospitals	Galveston, Tex.
Hermann Hospital	Houston Tex.
Jefferson Davis Hospital	Houston Tex.
Methodist Hospital	Houston Tex.
St Joseph's Infirmary	Houston Tex.
Baptist Memorial Hospital	San Antonio Tex.
Robert B Green Memorial Hospital	San Antonio Tex.
Santa Rosa Hospital	San Antonio Tex.
Kings Daughters Hospital	Temple Tex.
Scott and White Memorial Hospital	Temple Tex.
Wichita Falls Clinic Hospital	Wichita Falls Tex.
St Benedict's Hospital	Ogden Utah
Thomas D Dee Memorial Hospital	Ogden Utah
Dr W H Groves Latter Day Saints Hospital	Salt Lake City
Holy Cross Hospital	Salt Lake City
St. Mark's Hospital	Salt Lake City
Salt Lake County General Hospital	Salt Lake City
Bishop de Goesbriand Hospital	Burlington Vt.
Mary Fletcher Hospital	Burlington Vt.
Alexandria Hospital	Alexandria Va.
University of Virginia Hospital	Charlottesville Va
Lynchburg General Hospital	Lynchburg Va
Riverside Hospital	Newport News Va.
De Paul Hospital	Norfolk Va.
Norfolk General Hospital	Norfolk Va.
Johnston Willis Hospital	Richmond Va
Medical College of Virginia—Hospital Division (Memorial, Dooley and St. Philip Hospitals)	Richmond Va
Stuart Circle Hospital	Richmond Va
Jefferson Hospital	Roanoke, Va.
Lewis Gale Hospital	Roanoke, Va
Memorial and Crippled Childrens Hospital	Roanoke Va.
Winchester Memorial Hospital	Winchester Va.
Columbus Hospital	Seattle Wash.
Doctors Hospital	Seattle Wash
King County Hospital Unit No 1 (Harborview)	Seattle Wash.
Providence Hospital	Seattle Wash
Seattle General Hospital	Seattle Wash.
Swedish Hospital	Seattle Wash.
Virginia Mason Hospital	Seattle Wash
Deaconess Hospital	Spokane Wash.
Sacred Heart Hospital	Spokane Wash.
Pierce County Hospital	Tacoma Wash
Bluefield Sanitarium	Bluefield W Va
Charleston General Hospital	Charleston W Va.
Kanawha Valley Hospital	Charleston W Va
St. Mary's Hospital	Huntington W Va
Camden Clark Memorial Hospital	Parkersburg W Va.
St. Joseph's Hospital	Parkersburg W Va
Ohio Valley General Hospital	Wheeling W Va.
Wheeling Hospital	Wheeling W Va.
Luther Hospital	Eau Claire Wis.
St. Agnes Hospital	Fond du Lac Wis
Mercy Hospital	Janesville Wis.
La Crosse Lutheran Hospital	La Crosse Wis.
St. Francis Hospital	La Crosse Wis
Madison General Hospital	Madison, Wis.
Methodist Hospital.	Madison Wis.
St. Mary's Hospital	Madison Wis.
State of Wisconsin General Hospital	Madison, Wis.
St Joseph's Hospital	Marshfield Wis
Columbia Hospital	Milwaukee
Evangelical Deaconess Hospital	Milwaukee
Milwaukee County Hospital	Milwaukee
Milwaukee Hospital	Milwaukee
Misericordia Hospital	Milwaukee
Mount Sinai Hospital	Milwaukee
St. Joseph Hospital.	Milwaukee
St. Luke's Hospital	Milwaukee
St. Mary's Hospital	Milwaukee
St. Michael Hospital	Milwaukee
Mercy Hospital	Oshkosh Wis.
St. Mary's Hospital	Racine Wis
St. Mary's Hospital	Wausau Wis
Kuakini Hospital and Home	Honolulu T H.
Queen's Hospital	Honolulu T H
St. Francis Hospital	Honolulu T H.
Bayamon District Hospital	Bayamon P R.
Fajardo District Hospital	Fajardo P R.
Clinica Quirurgica Dr Pila	Ponce P R
Presbyterian Hospital	San Juan P R.
San Juan City Hospital	San Juan P R

MIXED

Number of Approved Programs 24

Jefferson Hillman Hospital Birmingham Ala. Medical, Surgical
St Vincent's Hospital Los Angeles Medical Surgical Obstetric.
Ochsner Foundation Hospital New Orleans Medical.
Faulkner Hospital Boston
Jersey City Hospital Jersey City N.J
Jewish Hospital Brooklyn.
Kings County Hospital Brooklyn.
Bellevue Hospital Div I Columbia University New York City Medical Surgical Pathologic Chest.
Bellevue Hospital Div II, Cornell University New York City Medical Pathologic.
Bellevue Hospital, Div III, New York University New York City Medical, Surgical Pediatric Ob -Gyn., Psychiatric Neurologic, Phys Med and Rehab
Goldwater Memorial Hospital New York City Medical Surgical Neurological.
Montefiore Hospital for Chronic Diseases New York City Medical Surgical Gynecologic.
Roosevelt Hospital, New York City Medical, Surgical.
St Luke's Hospital New York City Medical, Surgical.
Staten Island Hospital, Staten Island N Y
General Hospital Syracuse N Y
Watts Hospital Durham N C
Cincinnati General Hospital, Cincinnati Medical Surgical, Ob -Gyn Pediatric.
Glenville Hospital Cleveland
Newport Hospital, Newport, R.I. Medical Surgical, Obst.
Baroness Erlander Hospital, Chattanooga Tenn
Parkland Hospital, Dallas, Tex., Medical Surgical.
Salt Lake County General Hospital, Salt Lake City Medical Pediatric
Theda Clark Memorial Hospital, Neenah, Wis

STRAIGHT

Number of Approved Programs 234

INTERNAL MEDICINE

Freedmen's Hospital	Washington D C
Veterans Admin. Hospital	Los Angeles Calif
Veterans Admin. Hospital	Newington Conn.
Veterans Admin Hospital	Chamblee Ga
Veterans Admin Hospital	Nashville, Tenn
Veterans Admin Hospital	McKinney Texas
Veterans Admin Hospital	Salt Lake City Utah
Veterans Admin Hospital	Richmond Va.
Jefferson Hillman Hospital	Birmingham Ala
Stanford University Hospitals	San Francisco
University of California Hospital	San Francisco
Grace-New Haven Community Hospital New Haven Unit (University Service)	New Haven, Conn.
Georgetown University Hospital	Washington, D C
George Washington University Hospital	Washington D C
Grady Memorial Hospital	Atlanta
Emory University Hospital	Emory University Ga.
Mount Sinai Hospital	Chicago
University of Chicago Clinics	Chicago
Louisville General Hospital	Louisville Ky
Baltimore City Hospital	Baltimore
Church Home and Hospital	Baltimore
Johns Hopkins Hospital	Baltimore
Sinai Hospital	Baltimore
Beth Israel Hospital	Boston
Boston City Hospital	Boston
Massachusetts General Hospital	Boston
Massachusetts Memorial Hospital	Boston
New England Center Hospital	Boston
Peter Bent Brigham Hospital	Boston
Providence Hospital	Detroit
University of Minnesota Hospitals	Minneapolis
Barnes Hospital	St Louis
St. Louis City Hospital	St Louis
Jersey City Hospital	Jersey City N J
Albany Hospital	Albany N Y
Beth El Hospital	Brooklyn
Cumberland Hospital	Brooklyn
Jewish Hospital	Brooklyn
Kings County Hospital	Brooklyn
Long Island College Hospital	Brooklyn
Maimonides Hospital	Brooklyn
Methodist Hospital	Brooklyn
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn
St Catherine's Hospital	Brooklyn
St. John's Episcopal Hospital	Brooklyn
Buffalo General Hospital	Buffalo N Y
Mary Imogene Bassett Hospital	Cooperstown N Y
Mary Immaculate Hospital	Jamaica, N Y
Bellevue Hospital, Div I—Columbia University	New York City
Bellevue Hospital Div II—Cornell University	New York City
Bellevue Hospital, Div III—New York University	New York City
Bellevue Hospital Div IV—New York University	New York City
Bronx Hospital	New York City
Flower and Fifth Avenue Hospitals	New York City
New York Hospital	New York City
Presbyterian Hospital	New York City
St Vincent's Hospital	New York City
University Hospital	New York City

INTERNAL MEDICINE—Continued

Genesee Hospital	Rochester N Y
Strong Memorial Rochester Municipal Hospitals	Rochester, N Y
Duke Hospital	Durham N C
Watts Hospital	Durham N C
*North Carolina Baptist Hospital	Winston Salem N C
*Mount Sinai Hospital	Cleveland
University Hospitals	Cleveland
*Ohio State University Hospital	Columbus, Ohio
Nashville General Hospital	Nashville Tenn.
St Thomas Hospital	Nashville Tenn
Vanderbilt University Hospital	Nashville Tenn
Baylor University Hospital	Dallas Texas
Methodist Hospital	Dallas Texas
Parkland Hospital	Dallas Texas
St. Paul s Hospital	Dallas Texas
University of Virginia Hospital	Charlottesville Va
Kings County Hospital Unit No I (Harborview)	Seattle Wash

OBSTETRICS—GYNECOLOGY

Freedmen s Hospital	Washington D C
Stanford University Hospitals	San Francisco
University of California Hospital	San Francisco
Johns Hopkins Hospital	Baltimore
Beth Israel Hospital	Boston
Boston City Hospitals	Boston
University of Minnesota Hospitals	Minneapolis
St. Louis City Hospital	St. Louis
†Beth El Hospital	Brooklyn
Cumberland Hospital	Brooklyn
Kings County Hospital	Brooklyn
Long Island College Hospital	Brooklyn
Maimonides Hospital	Brooklyn
Methodist Hospital	Brooklyn
St. Catherine s Hospital	Brooklyn
Bronx Hospital	New York City
New York Hospital	New York City
Genesee Hospital	Rochester N Y
†Strong Memorial Rochester Municipal Hospitals	Rochester, N Y
Duke Hospital	Durham N C
†Watts Hospital	Durham N C
North Carolina Baptist Hospital	Winston-Salem N C
*Mount Sinai Hospital	Cleveland
*Ohio State University Hospital	Columbus Ohio
Nashville General Hospital	Nashville Tenn
†St. Thomas Hospital	Nashville Tenn
Vanderbilt University Hospital	Nashville Tenn.
Salt Lake County General Hospital	Salt Lake City
University of Virginia Hospital	Charlottesville Va

PATHOLOGY

Veterans Admin Hospital	Newington Conn
University of California Hospital	San Francisco
Grace-New Haven Community Hospital New Haven Unit (University Service)	New Haven Conn
Baltimore City Hospital	Baltimore
Johns Hopkins Hospital	Baltimore
Boston City Hospital	Boston
Children s Hospital Medical Center	Boston
Massachusetts Memorial Hospital	Boston
Peter Bent Brigham Hospital	Boston
Providence Hospital	Detroit
Barnes Hospital	St. Louis
West Jersey Hospital	Camden N.J
Jersey City Hospital	Jersey City N.J
Kings County Hospital	Brooklyn
Maimonides Hospital	Brooklyn
Methodist Hospital	Brooklyn
Queens General Hospital	Jamaica N Y
Montefiore Hospital for Chronic Diseases	New York City
New York City Hospital	New York City
New York Hospital	New York City
Presbyterian Hospital	New York City
Strong Memorial Rochester Municipal Hospitals	Rochester, N Y
Duke Hospital	Durham N C
Vanderbilt University Hospital	Nashville Tenn
Parkland Hospital	Dallas Tex.

PEDIATRICS

Children s Hospital	Los Angeles
Stanford University Hospitals	San Francisco
University of California Hospital	San Francisco
Grace-New Haven Community Hospital New Haven Unit (University Service)	New Haven Conn
Grady Memorial Hospital	Atlanta
University of Chicago Clinics	Chicago
Louisville General Hospital	Louisville Ky
Baltimore City Hospital	Baltimore
Johns Hopkins Hospital	Baltimore
Sinai Hospital	Baltimore
Boston City Hospital	Boston
Massachusetts General Hospital	Boston
Providence Hospital	Detroit
University of Minnesota Hospitals	Minneapolis
St Louis City Hospital	St. Louis
Jersey City Hospital	Jersey City N.J
Beth El Hospital	Brooklyn
Cumberland Hospital	Brooklyn
Jewish Hospital	Brooklyn
Kings County Hospital	Brooklyn
Long Island College Hospital	Brooklyn
Maimonides Hospital	Brooklyn
Methodist Hospital	Brooklyn
Bellevue Hospital, Div III, New York University	New York City
New York Hospital	New York City
Genesee Hospital	Rochester N Y
Strong Memorial Rochester Municipal Hospitals	Rochester, N Y
Duke Hospital	Durham N C
Watts Hospital	Durham N C
North Carolina Baptist Hospital	Winston-Salem N C
University Hospitals	Cleveland
St. Thomas Hospital	Nashville Tenn.
Vanderbilt University Hospital	Nashville Tenn
Milwaukee Children s Hospital	Milwaukee Wis.

* Second year
† Obstetrics only

SURGERY

Freedmen s Hospital	Washington D C
Veterans Admin Hospital	Los Angeles
Veterans Admin. Hospital	Newington, Conn
Veterans Admin Hospital	Nashville Tenn.
Veterans Admin Hospital	McKinney Tex.
Veterans Admin. Hospital	Salt Lake City Utah
Veterans Admin Hospital	Richmond Va.
Jefferson Hillman Hospital	Birmingham Ala.
Stanford University Hospitals	San Francisco
University of California Hospitals	San Francisco
Grace-New Haven Community Hospital New Haven Unit (University Service)	New Haven, Conn.
George Washington University Hospital	Washington, D C
Grady Memorial Hospital	Atlanta
Emory University Hospital	Emory University Ga
Mount Sinai Hospital	Chicago
University of Chicago Clinics	Chicago
Johns Hopkins Hospital	Baltimore
Sinai Hospital	Baltimore
Beth Israel Hospital	Boston
Boston City Hospital	Boston
Massachusetts General Hospital	Boston
Massachusetts Memorial Hospital	Boston
New England Center Hospital	Boston
Peter Bent Brigham Hospital	Boston
Providence Hospital	Detroit
University of Minnesota Hospitals	Minneapolis
Barnes Hospital	St Louis
St Louis City Hospital	St. Louis
Jersey City Hospital	Jersey City, N.J
Albany Hospital	Albany N Y
Beth El Hospital	Brooklyn
Cumberland Hospital	Brooklyn
Jewish Hospital	Brooklyn
Kings County Hospital	Brooklyn
Long Island College Hospital	Brooklyn
Maimonides Hospital	Brooklyn
Methodist Hospital	Brooklyn
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn
St Catherine s Hospital	Brooklyn
St. John s Episcopal Hospital	Brooklyn
Buffalo General Hospital	Buffalo N Y
Mary Imogene Bassett Hospital	Cooperstown, N Y
Mary Immaculate Hospital	Jamaica N Y
Queens General Hospital	Jamaica N Y
Bellevue Hospital Div I Columbia University	New York City
Bellevue Hospital Div II Cornell University	New York City
Bellevue Hospital Div III New York University	New York City
Bellevue Hospital Div IV New York University	New York City
Bronx Hospital	New York City
Flower and Fifth Avenue Hospitals	New York City
Hospital for Joint Diseases	New York City
New York Hospital	New York City
Presbyterian Hospital	New York City
St Vincent s Hospital	New York City
Genesee Hospital	Rochester N Y
Highland Hospital	Rochester, N Y
Duke Hospital	Durham N C
Watts Hospital	Durham N C
North Carolina Baptist Hospital	Winston-Salem N C
St. Mary s Hospital	Cincinnati
*Mount Sinai Hospital	Cleveland
St Alexis Hospital	Cleveland
University Hospitals	Cleveland
*Ohio State University Hospital	Columbus Ohio
Nashville General Hospital	Nashville Tenn
St Thomas Hospital	Nashville Tenn
Vanderbilt University Hospital	Nashville Tenn.
Baylor University Hospital	Dallas Tex.
St. Paul s Hospital	Dallas, Tex.
Salt Lake County General Hospital	Salt Lake City
University of Virginia Hospital	Charlottesville Va.

SPECIAL

Number of Approved Programs 31

St. Mary s Hospital, San Francisco, Calif Medical Surgical Pediatric, Ob -Gyn
St. Bernard s Hospital Chicago Ill , Surgical.
St. Joseph s Hospital Chicago Ill Medical Surgical Pediatric, Ob -Gyn
University of Chicago Clinics Chicago Ill Medical, Surgical
St Joseph Hospital, Lexington Ky Medical, Surgical Ob -Gyn
Kentucky Baptist Hospital Louisville Ky Medical Surgical Pediatric, Ob Gyn
Mercy Hospital Baltimore Md. Medical Surgical, Pediatric, Ob -Gyn.
Evangelical Deaconess Hospital Detroit, Mich , Medical Surgical Ob -Gyn.
Henry Ford Hospital Detroit, Mich Medical, Surgical
Mt. Carmel Mercy Hospital Detroit Mich Medical Surgical Ob -Gyn.
St. Barnabas Hospital, Minneapolis Minn. Medical Surgical Pediatric Ob Gyn
Charles T Miller Hospital St Paul Minn Medical Surgical Pediatric Ob Gyn
Brooklyn Hospital Brooklyn N Y , Medical, Surgical Ob -Gyn
Kings County Hospital Brooklyn N Y Medical Surgical
Long Island College Hospital Brooklyn N Y Medical Surgical
Methodist Hospital Brooklyn N Y Medical Surgical.
Mary Imogene Bassett Hospital Cooperstown N Y Medical Surgical Ob -Gyn
Meadowbrook Hospital Hempstead N Y Medical Surgical.
Bellevue Hospital Div I, New York City Medical Surgical Chest Diseases Pathological
Bellevue Hospital Div II, New York City , Medical, Pathological.
Bellevue Hospital Div III New York City Medical Surgical Psychiatric Neurologic Ob -Gyn Phy Med and Rehab
Beth David Hospital, New York City Medical Surgical Ob Gyn. Pediatric
Fordham Hospital New York City Medical, Surgical Ob -Gyn Pediatric.
Knickerbocker Hospital New York City Medical Surgical.
Presbyterian Hospital New York City Medical Surgical
Crouse-Irving Hospital, Syracuse, N Y Medical Pediatric
Hospital of the Good Shepherd Syracuse N Y Medical Surgical Pediatric Psychiatric.
Duke Hospital Durham N C Pediatric, Ob -Gyn
Thomas D Dee Memorial Hospital Ogden Utah Medical Surgical Ob -Gyn Pediatric.
St. Luke s Hospital Spokane Wash Medical Surgical, Ob -Gyn Pediatric Laboratory, X Ray
St. Joseph s Hospital Tacoma, Wash. Medical Surgical Ob -Gyn Pediatric.

APPROVED RESIDENCIES AND FELLOWSHIPS

Council on Medical Education and Hospitals of the American Medical Association
535 North Dearborn Street Chicago 10

Revised to September 1, 1951

Hospitals, 1,120, Assistant Residencies, Residencies and Fellowships, 19,852

The following services are approved by the Council on Medical Education and Hospitals as meeting the requirements of the Essentials of Approved Residencies and Fellowships In those specialties in which certifying boards have been established approval is extended in concurrence with the Board concerned The number of years of training for which approval has been granted is indicated in the column Length of Approved Program (years)" Residencies in which this designation does not appear have been approved without specifying the number of years for which they are accredited

The (*) indicates hospitals approved for intern training The numeral (1) is used to designate services, appointments to which are open to women The (†) represents temporary approval, pending formal inspection, in accordance with the plan announced in THE JOURNAL, March 2, 1946, p 586 Granting of approval on this basis has been terminated by action of the Council and the Advisory Board for Medical Specialties Hospitals temporarily approved prior to this action currently are being inspected to determine whether or not approval should be continued and if so, the number of years of training for which they will be accredited The beginning stipends for federal hospitals have not been listed, they are established in accordance with government pay tables

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1 ALLERGY

The following services have been approved by the Council and the Subspecialty Board for Allergy of the American Board of Internal Medicine
Hospitals 12 Assistant Residencies and Residencies 18

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
VETERANS ADMINISTRATION							
Veterans Admin Hospital [1]	Aspinwall Pa	L. H Criep	210	16 130	2	2	
NONFEDERAL							
Northwestern University Medical Center [1]	Chicago	S. Feinberg	20	5,250	2	2	225
University Hospital*	Ann Arbor Mich.	J Sheldon		9 631	1	1	124 16
Jewish Hospital*[1]	Brooklyn	M Walzer	17	10 735	1	2	65
New York Hospital*[1]	New York City	H. Baldwin		11 194	1	1	25
Roosevelt Hospital*[1]	New York City	R. A. Cooke	237	35 838		4	
University Hospital*	New York City	W C Spain	50	10 600	1	1	250
Duke Hospital*[1]	Durham N C						
Montefiore Hospital*[1]	Pittsburgh	L. H Criep		12 450	2	2	50
University of Virginia Hospital*[1]	Charlottesville Va.	O Swineford Jr		1 011	0	3	100
Medical College of Virginia—Hospital Division*	Richmond Va	W B Blanton		4 634	0	1	46 50
Milwaukee County Hospital*[1]	Milwaukee Wis		200	3 106	0	1	50

2 ANESTHESIOLOGY

The following services are approved by the Council and the American Board of Anesthesiology This approval is considered effective through July 1 1953 unless previously terminated After July 1, 1953 approval will be continued only in those hospitals offering a satisfactory program of at least two years in duration Prior to that date, all services presently approved will be reviewed in collaboration with the American Board of Anesthesiology to determine whether or not they meet requirements for full, two year approval
Hospitals 197 Assistant Residencies and Residencies 754

Name of Hospital	Location	Chief of Service	Total Anesthetics	Inhalation Anesthetics	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY								
Letterman Army Hospital*	San Francisco	R. R. Jones	6 616	3 763			2	
Fitzsimons Army Hospital*	Denver	J F Kellogg Jr	5,270	2 971	0	1	1	
Army Medical Center*[27]	Washington D C	C H. Mitchell	8,590	5,509	1	3	2	
Brooke Army Medical Center*[28]	San Antonio Texas	F C Dye	16 652	5 625			2	
UNITED STATES NAVY								
U S Naval Hospital*	Oakland, Calif	F M. Thornburg	10 767	1 729	0	2	2	
U S Naval Hospital*[1]	Bethesda, Md	D J Giorgio	3 439	2,203	2	4	2	
U S Naval Hospital*[1]	Chelsea, Mass	E Martin, Jr	3 198	393	1	2	2	
U S Naval Hospital*[1]	St Albans N Y	J G Kurfees	5 432	195			2	
U S Naval Hospital*	Philadelphia	S Whitehouse	5 010	593			2	

Numerical and other references will be found on page 462.

2 ANESTHESIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Total Anesthetics	Inhalation Anesthetics	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES PUBLIC HEALTH SERVICE								
U S Public Health Service Hospital*1–	Staten Island N Y	C L. Hebert	6 867	1 561	1	2	2	
VETERANS ADMINISTRATION								
Veterans Admin. Hospital*1	Los Angeles	N H Rupp	6 448	533	5	9	2	
Veterans Admin Hospital 1	San Francisco	A G Chimiklis	2 487	850	3	4	2	
Veterans Admin Hospital 1	Fort Logan Colo	F Brown	1 715	392	1	2	2	
Veterans Admin. Hospital	Washington D C	L. M Jones	1 927	601	0	2	2	
Veterans Admin Hospital 1	Hines, Ill	M. S Sadove	8 786	1 821	0	12	2	
Veterans Admin Hospital 1	Des Moines Iowa	J L Bailey	3 473	841	0	7	2	
Veterans Admin Hospital 1	Wadsworth Kans	R S McKee	3 413	523	1	2	2	
Veterans Admin Hospital	Framingham Mass.	D H Harwood	4,557	367	1	2	2	
Veterans Admin Hospital 1	Dearborn Mich	F E Greifenstein	5 387	523	0	3	2	
Veterans Admin Hospital 1	Minneapolis Minn	R. T Knight	4 102	1,579	10	10	2	
Veterans Admin Hospital 1	Jefferson Barracks Mo	H W Crouch	3 912	924	2	4	1	
Veterans Admin. Hospital 1	Lincoln Nebr	F Cole	1 826	138	1	1	1	
Veterans Admin Hospital 1	Brooklyn	S N Surk	2 542	472	2	4	2	
Veterans Admin Hospital 1	Buffalo	S I. Guest	2 007	597	0	3	2	
Veterans Admin. Hospital	New York City	E A Rovenstine	6 555	2 132	4	8	2	
Veterans Admin. Hospital	Dayton Ohio	C R. Dubiel	4 045	729	2	2	1	
Veterans Admin. Hospital	Portland Ore	F P Haugen	2 624	925		2	2	
Veterans Admin. Hospital*1	Memphis	R. Popper	5 476	1 416	1	2	1	
Veterans Admin Hospital 1	McKinney Texas	F A. D Alexander	1,578	548	1	2	2	
Veterans Admin. Hospital*	White River Jct. Vt	R. E Lapointe	1 748	358	1	2	2	
Veterans Admin Hospital 1	Richmond Va	C G Lynch	3.366	1 037	2	4	2	
Veterans Admin Hospital 1	Milwaukee Wis	R Foregger and R A Tella	2 774	604	5	5	2	
NONFEDERAL								
Jefferson Hillman Hospital*1	Birmingham Ala.	A. McNeal	8,573	1 109		1	2	50
Lloyd Noland Hospital*	Fairfield Ala.	A Habeeb	3 719	2 335	1	2	2	225
Herrick Memorial Hospital*1–	Berkeley Calif	R. H Johnson	7 417	994	1	1	1	100
Los Angeles County Hospital*1	Los Angeles	C W McCuskey	14 073	3 824	12	12	2	165
White Memorial Hospital*1	Los Angeles	F E Leffingwell	5 003	700	2	5	2	120
Samuel Merritt Hospital	Oakland Calif	B M Anderson	4 902	3 479	2	2	2	100
Children s Hospital*1	San Francisco	H D Lapp	3 074	2 350	1	2	2	50
Franklin Hospital*1	San Francisco	J L Cardwell	5 651	4 811	1	2	2	100
French Hospital*1	San Francisco	M. Skaggs	3 491	1 297	1	1	2	150
St Joseph s Hospital*1	San Francisco	C Wykoff	4 313	1 306	1	2	2	100
Stanford University Hospitals*1	San Francisco	R W Churchill	6 285	3,337	2	4	2	50
University of California Hospital*1	San Francisco	F J Murphy	5 777	4 483		6	2	75
University of Colorado Medical Center								
Colorado General Hospital*1	Denver Colo	R. W Virute	4 662	1 724	2	3	2	75
Denver General Hospital*1	Denver Colo	R. W Virute	3 076	1 662	1	1	2	75
Bridgeport Hospital*1	Bridgeport Conn	D M Massey	5 859	2 414	1	1	2	100
Hartford Hospital*1 29 30	Hartford Conn	R. M Tovell	31 794	14 319	15	25	2	50
St Francis Hospital*1	Hartford Conn	S. J Martin	12 817	5 143	5	10	2	75
Grace-New Haven Community Hospital*1								
New Haven Unit (University Service)	New Haven Conn	L J Hampton	6 491	3 328	3	6	2	40
Hospital of St. Raphael*1	New Haven Conn	M L Garofolo	9 300	3 554	2	2	2	100
St. Mary s Hospital*1	Waterbury Conn	W Grillo	6 603	3 787	1	2	1	150
Memorial Hospital	Wilmington Del	R. F Allen	3 380	1 628	1	1	2	125
Doctors Hospital*1	Washington D C	C W Hyde	7 994	5 598	1	2	2	100
Gallinger Municipal Hospital*1	Washington D C	E. B Tuohy	11 584	7 100	3	5	2	100
†Garfield Memorial Hospital*1	Washington D C	W E Bageant	4,215	443	2	2	2	73
Georgetown University Hospital*1	Washington D C	E B Tuohy	6 613	4 298	5	10	2	25
George Washington University Hospital*1	Washington D C	C Coakley	9 367	3 590	3	9	2	130
Riverside Hospital 1	Jacksonville Fla	J T Stage	868	630	1	1	2	150
University Hospital*1	Augusta Ga.	P P Volpitto	6 733	5 043	3	5	2	40
American Hospital*1	Chicago	Z Harris	2 870	1 508		6	2	50
Cook County Hospital*1	Chicago	H E Kretchmer	15 346	11 982		2	2	32
Grant Hospital*1	Chicago	L Gittleson	4 631	3 420	1	3	2	150
Michael Reese Hospital*1	Chicago	B Stodsky	9 192	5 083	2	4	2	50
Mount Sinai Hospital*1	Chicago	R. Weyl	5 489	4 159	1	2	2	50
Northwestern University Medical Center								
Wesley Memorial Hospital*1 30	Chicago	M Karp	8 974	7 623	2	6	2	50
Presbyterian Hospital*1	Chicago	C D Anderson	10 530	4 128	2	4	2	50
Research and Educational Hospitals*1	Chicago	M Sadove	4 536	2 575	2	6	2	55
St Luke s Hospital*1	Chicago	W A Conroy	6 437		3	5	2	25
University of Chicago Clinics*1	Chicago	H Livingstone	10 210	6 508	5	11	2	50
Evanston Hospital*1	Evanston Ill	J E Remlinger	5 687	2 092	2	4	2	200
St. Joseph s Hospital*	Joliet Ill.	L. D Ruttle	7 559	2 718	1	2	2	100
Indianapolis General Hospital*1	Indianapolis	L. J Mueller	13 615	3 370	2	3	2	100
Indiana University Medical Center*1	Indianapolis	V K. Stoelting	5 656	2 662	4	8	2	150
Methodist Hospital*1	Indianapolis	J M Whitehead	16 111	15 040	3	6	1	260
Memorial Hospital*	South Bend Ind	R. Rosenheimer	5 735	4 897	1	1	2	250
University Hospitals*1	Iowa City	S Cullen	7 817	6 245	5	8	2	50
University of Kansas Medical Center*1	Kansas City Kans	P H Lorhan	5 464	3 976	3	6	2	100
St Joseph Hospital*1	Lexington Ky	W G Sergent	7 611	2 431	1	2	2	200
Louisville General Hospital*1	Louisville Ky	R P Bergner	6 000	4 000	2	4	2	45
Charity Hospital of Louisiana*1	New Orleans	J Adriani	20 933	9 847	5	10	2	25
Ochsner Foundation Hospital*1	New Orleans	G B Grant	3 708	1 652	2	4	2	125
Touro Infirmary*1	New Orleans	W Baker	7 929	3 695	1	2	2	17
Eastern Maine General Hospital*1	Bangor Me	C S Dwyer	5 439	4 010	1	1	2	100
Central Maine General Hospital*1	Lewiston Me	G Clapperton	3 ,22	1 964	1	2	2	100
Maine General Hospital*1	Portland Me	J R. Lincoln	6 053	3 920	4	8	2	100
†University Hospital*1	Baltimore	A. T Nelson	7 942	1 736	2	5	2	150
Boston City Hospital*1	Boston	S C Wiggin	36 948	8 895		12	2	140
Lahey Clinic 1	Boston	U H Eversole	15 461	5 960	5	9	2	150
Massachusetts General Hospital*1	Boston	H K Beecher	18 955	8 400	8	13	2	41 66
Massachusetts Memorial Hospital*1	Boston	J G Arrowood	3 808	2 437	2	5	2	75
New England Center Hospital*1	Boston	B E. Etsten	1 640	916		3	2	73
New England Hospital*1	Boston	E Bartlett	3 448	1 963	2	2	2	50
Peter Bent Brigham Hospital*	Boston	W S Derrick	3 191	2 109	1	1	2	41 66
St Elizabeth s Hospital*1	Boston	L. Zentgraf	7 001	3,015	2	2	2	125
Cambridge City Hospital*1	Cambridge Mass.	D R. Branch	3,786	1 965	1	1	2	125
Mount Auburn Hospital*1	Cambridge Mass	J H Buskirk	5,243	2 461	1	2	2	125
Newton Wellesley Hospital*1	Newton Lower Falls, Mass	R. S Hunt	5 002	3,021	1	2	2	100

Numerical and other references will be found on page 462.

2 ANESTHESIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Total Anesthetics	Inhalation Anesthetics	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
Springfield Hospital*1	Springfield Mass	H. L. Strachan	12 448	1 833	1	1	1	100
Memorial Hospital*1	Worcester Mass	C B Hinds Jr	7 768	2 843	1	1	2	125
St Vincent Hospital*	Worcester Mass	W J Martin	5 858	2 973	2	4	2	58 33
City of Detroit Receiving Hospital*1	Detroit	F Greifenstein	6 814	1 773	2	8	2	217
Providence Hospital*1	Detroit	N M Bittrich	6 960	2 034	1	2	2	
Butterworth Hospital*1	Grand Rapids Mich.	M L. Byrd	5 845	1 637	1	3	2	125
University of Minnesota Hospital*1 81	Minneapolis	R. Knight	6 103	5,221	4	12	2	
Mayo Foundation	Rochester	J S Lundy			4	14	2	135
Research Hospital*1	Kansas City Mo	M C Peterson	9 101	4,233	1	2	2	160
St John s Hospital*	St. Louis	S Brown	7 120	1 880			3	200
St Mary s Group of Hospitals*1	St. Louis	J McNearney	7,236	3,543	1	3	2	35
University of Nebraska Hospital*1	Omaha Nebr	H H Davis	2 428	1 177	1	2	2	125
Mary Hitchcock Memorial Hospital*1	Hanover N H	R. H Barrett	4 711	1 870	1	3	2	163
West Jersey Hospital*1	Camden N J	E K. Hultzman	4 543		1	3	2	125
St. Joseph Hospital*1	Paterson, N J	H C Walker	5,313	3 813	2	2	2	150
Albany Hospital*1	Albany N Y	M H Harmel	7 283		4	8	2	50
Beth El Hospital*1	Brooklyn	A C Goldfeder	5 221	2,013	1	2	2	100
Cumberland Hospital*1	Brooklyn	I M Pallin	2 131	1 265	2	2	1	80
Jewish Hospital*1	Brooklyn	I. M Pallin	7,304	3 793	4	6	2	100
Maimonides Hospital*1	Brooklyn	L. Holzmann	6 470	3 978	1	3	1	75
Methodist Hospital*1	Brooklyn	R. Waelsch	6 874	3 077	1	1	1	25
St. Catherine s Hospital*1	Brooklyn	F P Ansbro	3 823	1 753	1	2	2	100
Unity Hospital*8	Brooklyn	B A Greene	4 519	1 092	1	1	1	100
Buffalo General Hospital*	Buffalo	C J Durshordwe	11 141	1 120	3	3	2	25
Edward J Meyer Memorial Hospital*1	Buffalo	P W Searles	3 115	1,376	2	5	2	100
Millard Fillmore Hospital*1	Buffalo	D Babbage	10 751	8,590	1	1	2	50
Flushing Hospital and Dispensary*1	Flushing N Y	E. Apogi	7,531	6,371	1	2	2	100
Mary Immaculate Hospital*	Jamaica N Y	G Frank	5,272	3 872	1	1	1	110
Bellevue and Associated Hospitals	New York City	E. A Rovenstine	15 500	9 600	7	17	2	100
Beth Israel Hospital*1	New York City	S. G Hershey	5 515	2 555	1	3	2	50
Flower and Fifth Avenue Hospitals*1	New York City	D E. Brace	8 178	5 113	2	2	2	
Goldwater Memorial Hospital*1	New York City	E A. Rovenstine	831	354		2	2	175
Hospital for Joint Diseases*1	New York City	A. M Betcher	3 684	2 483	1	3	2	40
Hospital for Special Surgery	New York City	C Burstein	2 447	1 989	1	1	1	160
Lenox Hill Hospital*	New York City	M Frick	7 834	5 153	1	1	2	50
Memorial Hospital	New York City	O Schweizer	5 907	5 638	2	4	1	300
Montefiore Hospital for Chronic Diseases*1	New York City	P A Lief	2 258	834	1	1	1	50
Mount Sinai Hospital*1	New York City	M. H Adelman	9 007	5 100	5	5	2	50
New York City Hospital*1	New York City	D Bizzarri	2 694	1 166	3	3	1	229 16
New York Hospital*1	New York City	J Artusio	9 590	7 032	2	4	2	25
New York Polyclinic Medical School and Hospital*1	New York City	S Resnick	6 088	4 650	2	4	2	100
Presbyterian Hospital*1	New York City	E M Papper	14 049	8 049	12	26	2	208
St Clare s Hospital*	New York City	R A Rose	7 029	2,250	1	1	2	25
St Luke s Hospital*1	New York City	G E Burford	4 399	1 520	1	3	2	50
St Vincent s Hospital*1	New York City	V J Collins	4 365	6 752	3	3	2	100
Sydenham Hospital*1	New York City	M C Fischman	2 012	972	1	1	1	
University Hospital*1	New York City	E A Rovenstine	5 914	5 098	1	3	2	80
Genesee Hospital*1	Rochester N Y	K. S Smith	4 037	927	1	1	1	83 33
Rochester General Hospital*1	Rochester N Y	V J Covello	5 620	6 545	1	2	2	55
St Mary s Hospital*1	Rochester N Y	D Bianchi	8 219	5,526	1	3	2	125
Ellis Hospital*1	Schenectady, N Y	H A Snell	7 185	4 735	1	1	2	125
State University Medical Center Hospitals*59	Syracuse N Y	E J Delmonico	7 775	2 714		1	2	125
Grasslands Hospital*7	Valhalla N Y	H F Bishop	1 307	577	1	2	2	125
Duke Hospital*1	Durham N C	R. Stephan	11 610	7 391	3	4	2	100
†Mercy Hospital*1	Canton Ohio	E C Reno	4 937	2 142	1	2	2	125
Cleveland Clinic Hospital 1	Cleveland	D E Hale	8 085	1 530	2	8	2	
Mount Sinai Hospital*1	Cleveland	S Katz	7 429		1	2	2	100
St. Luke s Hospital*1	Cleveland	B B Sankey	12 670	5 468	3	4	2	100
Ohio State University Hospital*1	Columbus, Ohio	J J Jacoby	7,208	4 891	2	4	2	50
Huron Road Hospital*1	East Cleveland, Ohio	R. J Whitacre	9 030	5 313	3	6	2	150
Marymount Hospital*	Garfield Heights Ohio	N G DePiero			1	1	1	100
Maumee Valley Hospital*	Toledo Ohio	E J Purchla	1 379	544	2	2	1	125
Youngstown Hospital*7	Youngstown Ohio	A J Fisher	14 122	6 532	1	2	2	75
University Hospital*1	Oklahoma City Okla.	H A. Bennett	4 648	3 515	6	6	2	50
University of Oregon Medical School Hospitals and Clinics*1	Portland Ore	F P Haugen	11 731	3 293	2	4	2	85
Abington Memorial Hospital*1	Abington Pa.	R. Masiello	5 737	3 592	1	1	2	100
Graduate Hospital of the University of Pennsylvania*1	Philadelphia	H H Stone	4 441	4 012	2	2	2	
Hahnemann Hospital*1	Philadelphia	H S Ruth	9 229	3 494	5	10	2	50
Hospital of the University of Pennsylvania*1	Philadelphia	R. D Dripps	14 716	6 156	4	13	2	100
Hospital of the Woman s Medical College of Pennsylvania*1	Philadelphia	H Stone	4 086	740	1	2	2	60
†Jewish Hospital*1	Philadelphia	M L. Bernstine	9 940	4 894	3	3		200
Lankenau Hospital*1	Philadelphia	C S. Turville	4 481	2 931	1	1	1	50
Mount Sinai Hospital*1	Philadelphia	A. T Rose	8 180	3 920	3	3	2	100
Presbyterian Hospital*1	Philadelphia	S. Schotz	4 658	3 028	1	2	2	100
Temple University Hospital*1	Philadelphia	L. W Krumperman	10,291	3 086		4	2	
Allegheny General Hospital*1	Pittsburgh	R. L. Patterson	9 170	4 958		4	2	100
Mercy Hospital*1	Pittsburgh	F F Foldes	11 121	3 468			2	100
St Francis Hospital*1	Pittsburgh		5 951	2 126			2	
Robert Packer Hospital*1	Sayre Pa.	W F Brehm	6 849	4 637		1	2	150
†Sharon General Hospital 1	Sharon, Pa.	I W Flamberg	5 003	3 991	2	4	2	200
Rhode Island Hospital*1	Providence R.I.	M Saklad	7 467	3 012	1	2	2	60
Roper Hospital*P	Charleston S.C	F E. Kredel			1	1	1	50
Baroness Erlanger Hospital*1	Chattanooga Tenn	F Brannen	4 872	2,588	2	3	2	150
John Gaston Hospital*	Memphis Tenn	M F Poe	8,220	3 499	1	2	2	50
Vanderbilt University Hospital*1	Nashville Tenn	B H Robbins	6 092	3 777			2	
Baylor University Hospital*1	Dallas Tex.	E F Weir	15 802	9 951	1	2	2	60
University of Texas Medical Branch Hospitals*1 John Sealy Hospital	Galveston Tex	H C Slocum	4 830	3 650	4	8	2	50
Hermann Hospital*1	Houston Tex	L. F Schuhmacher	12 979	7,349	1	3	2	75
University of Utah Affiliated Hospitals*1 77	Salt Lake City	S Smith	11 494	9,309	4	8	2	150
Bishop DeGoesbriand Hospital*1	Burlington Vt	J Abajian	2 744	923	1	3	2	100
Mary Fletcher Hospital*1	Burlington Vt.	J Abajian	2 263	894	3	3	2	50
Medical College of Virginia—Hospital Division*1	Richmond Va.	W E Pembleton	13 824	4,600		2	2	40 50
King County Hospital Unit No 1 (Harborview *1 31	Seattle Wash	J E Mathwig	2 518	1 632	2	2	2	100
Providence Hospital*1	Seattle Wash	J M Mackinnon	8 713	6,236	1	2	2	110
Virginia Mason Hospital*1	Seattle Wash	D C Moore	3 951	3,221	1	2	2	100
Tacoma General Hospital*1	Tacoma Wash	J J Bonica	5 713	3 474	3	3	2	200
Ohio Valley General Hospital*	Wheeling W Va	D E Greeneltch	6,508	3,575	1	2	2	200
State of Wisconsin General Hospital*1	Madison Wis.	A M Mackay	5 681	3 140	3	7	2	25
†Milwaukee County Hospital*1	Milwaukee	D Gatherum	4 017	2 507	1	2		50

Numerical and other references will be found on page 462.

3 CARDIOVASCULAR DISEASE

The following services have been approved by the Council on Medical Education and Hospitals In the future, residencies in cardiovascular disease will be approved by the Council in collaboration with the Subspecialty Board for Cardiovascular Disease of the American Board of Internal Medicine

Hospitals 25 Assistant Residencies and Residencies 44

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[9]	Total Residences Offered[9]	Beginning Stipend (Month)
UNITED STATES ARMY									
Letterman Army Hospital★	San Francisco	B E Pollock	758	1 069	41	33			
Fitzsimons Army Hospital★	Denver	E M Goyette	9,371	2,351	29	28		2	
Army Medical Center★[27]	Washington D C	J S Taylor	683	6 134	49	39		1	
Brooke Army Medical Center★[28]	San Antonio Tex	R. P Johnson	7 308	3,285	31	25			..
UNITED STATES NAVY									
U S. Naval Hospital★[1]	Bethesda Md	L L Norman	761	7 887	86	57	1	1	...
VETERANS ADMINISTRATION									
Veterans Admin. Hospital★[1]	Long Beach Calif	D W Leik	1 270	816	122	122		2	
Veterans Admin. Hospital	Hines Ill	L A Baker	1 818		206	94			
Veterans Admin. Hospital★	Richmond Va	J Williams	568		55	28	1	3	
NONFEDERAL									
George Washington University Hospital★	Washington D C	C B Ethridge	541		70	32	2	2	200
Michael Reese Hospital★[1]	Chicago	L N Katz	478	4 804	92	72	8	8	
Indiana University Medical Center★[1]	Indianapolis	G Bond		1 279				2	200
Henry Ford Hospital★[1]	Detroit	F J Smith	1 806	16 473	137	80		3	225
Irvington House[1 5]	Irvington-on Hudson N Y	A. C DeGraff	245	635		..	2	2	200
Bellevue Hospital Div III New York University★	New York City	J Baldwin		4 733					
St. Luke s Hospital★[1]	*New York City*								
†St. Francis Sanatorium for Cardiac Children[1]	Roslyn N Y	L M Taran	275		2	1	1	2	200
Ohio State University Hospital★[1]	*Columbus Ohio*	*R W Kissane*					1	2	122
White Cross Hospital★[1]	Columbus Ohio	R W Kissane	715		40	15	1	1	100
Hospital of the Woman s Medical College of Penna.★[1]	Philadelphia								
Pennsylvania Hospital★	Philadelphia	J B Vander Veer		3 493			3	3	20
Philadelphia General Hospital★[1]	Philadelphia	T McMillan					4	4	75
Presbyterian Hospital★	Pittsburgh	F J Gregg					1	1	58 33
St. Francis Hospital★[1]	Pittsburgh								
Rhode Island Hospital	Providence R I.	F B Cutts		842			1	1	50
University of Texas Medical Branch Hospitals John Sealy Hospital★[1]	Galveston	G R Herrmann		1 989		..	2	4	50

4 CONTAGIOUS DISEASES

The following services are approved by the Council on Medical Education and Hospitals

Hospitals 13 Assistant Residencies and Residencies 59

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[9]	Total Residences Offered[9]	Beginning Stipend (Month)
NONFEDERAL									
Children s Hospital★	San Francisco	E B Shaw	444		20	14	1	1	50
Cook County Hospital★[1]	Chicago	A L. Hoyne	754		40	24		2	32
Municipal Contagious Disease Hosp tal[1]	Chicago	M H Lepper	2 510	411	86	73	6	6	172
Massachusetts Memorial Hospital★	Boston	L. Weinstein	975		19	12	2	3	50
Belmont Hospital[1]	Worcester Mass	H K Spangler	458		5		1	2	155
Herman Kiefer Hospital[1]	Detroit	D C Young	1 690		103	61		3	397
Essex County Hospital for Contagious Diseases[1]	Belleville N.J	E L Smith	1,540		31	7	2	2	175
Municipal Hospital for Contagious Diseases[6]	Camden N.J	L L Corlell	385	1 700	8	4			
Kingston Avenue Hospital[1]	Brooklyn	T Givan	3 503		46	22	11	11	130
Queens General Hospital★[1]	Jamaica N Y	H. A. Reisman	603		9	4	1	2	80
Willard Parker Hospital[1]	New York City	J F Landon	5 710		52	25	9	19	50
City Hospital★[1]	Cleveland	R. M Eiben	2 335	1 034	109	55	3	4	67
Philadelphia Hospital for Contagious Diseases[1]	Philadelphia	A C LaBocetta	1 712		22	19	4	4	75

5 DERMATOLOGY AND SYPHILOLOGY

The following services are approved by the Council and the American Board of Dermatology and Syphilology

Hospitals 84 Assistant Residencies and Residencies 227

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatients Visits	Deaths on Service	Autopsies	First Year Residences Offered[9]	Total Residences Offered[9]	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY										
Letterman Army Hospital★	San Francisco	R. S Higdon	278	7 767	0	0			2	
Army Medical Center★ [27]	Washington D C	R G Thompson	312	21 067	0	0	3	7	3	
Brooke Army Medical Center★[28]	San Antonio Texas	C B White	2 196	12,030	0	0	..		2	
UNITED STATES NAVY										
U S Naval Hospital★	San Diego Calif	C D Bell	690	3,480	0	0	4	4	2	
U S Naval Hospital★[1]	St. Albans N Y	L K. MacClatchie	299	3,636	1	0	..		2	
U S Naval Hospital★	Philadelphia	R L Gilman	453	3,341	2	2	..	..	2	
UNITED STATES PUBLIC HEALTH SERVICE										
U S Public Health Hospital★[1]	Staten Island N Y	B J Chester	938	19 028	0	0	1	4	3	...
FEDERAL SECURITY AGENCY										
Freedmen s Hospital★[1]	Washington D C	C W Freeman	32	10 036	1	0		2	2	

Numerical and other references will be found on page 462.

5 DERMATOLOGY AND SYPHILOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
VETERANS ADMINISTRATION										
Veterans Admin. Hospital*1	Long Beach, Calif	M Obermayer	924	3 558	4	0	1	3	2	
Veterans Admin Hospital*1	Los Angeles	T H. Sternberg	1 449	2 768	1	1	2	6	2	
Veterans Admin. Hospital	Hines Ill	E A. Oliver	1 050		26	11		2	2	
Veterans Admin Hospital	New Orleans, La	C B Kennedy	110	800	2	2	1	1	1	
Veterans Admin Hospital 1	Fort Howard, Md.	M. Sullivan	123	92	0	0		3	3	
Veterans Admin Hospital 1	Minneapolis	H. E Michelson	412	360	2	0	2	2	3	
Veterans Admin Hospital 1	New York City	O Canizares	537	4 493	3	3	1	3	3	
Veterans Admin Hospital 1	Aspinwall, Pa	S. Crawford	290		1	1	1	1	1	
Veterans Admin Hospital 1 33	Milwaukee	J Kanter	632	932	2	2	1	1	2	
NONFEDERAL										
Jefferson Hillman Hospital*1	Birmingham Ala	R. O Noojin	159	1 185	1	0	1	2	3	50
Lloyd Noland Hospital*	Fairfield Ala	P G Reque	125	8 665	0	0	1	1	1	225
Los Angeles County Hospital*1	Los Angeles	N P Anderson	651	19 819	26	9	3	3	3	165
White Memorial Hospital*	Los Angeles	C E Counter	20	6,575	0	0	1	2	2	120
Stanford University Hospitals*1	San Francisco	E M. Farber	41	9,228	0	0	1	1	2	50
University of California Hospital*1	San Francisco	F A. Torrey	39	7,359	1	1		3	3	75
University of Colorado Medical Center Colorado General Hospital*1	Denver	O S Philpott	22	4 321	2	2	1	1	1	75
Georgetown University Hospital*	Washington, D C	F J Eichenlaub		2 335	0	0	1	2	2	
Chicago Intensive Treatment Center 1 2	Chicago	J Rodriquez	1 485	7 942	0	0	1	1	1	65
Cook County Hospital*1	Chicago	J R. Webster	237	11,369	24	6		2	3	32
Michael Reese Hospital*1	Chicago	H Rattner	102	7 069	1	1	1	1	1	25
Northwestern University Medical Center	Chicago	H Rattner		8 655					3	
Research and Educational Hospital*1	Chicago	F E Senar	57	13,360	1	1	1	1	3	55
University of Chicago Clinics*	Chicago	S Rothman.	139	3 438	1	0	3	8	3	25
Indianapolis General Hospital*1	Indianapolis	J E Dalton	57	8,201	2	2	1	3	3	80
University Hospitals*1	Iowa City	R. Nomland	326	3 650	6	6	1	2	3	50
University of Kansas Medical Center*1	Kansas City Kans	R. L. Sutton	80	1,898			1	1	1	100
Charity Hospital of Louisiana*1	New Orleans		494	34 826	3	1	3	5	3	25
Johns Hopkins Hospital*2	Baltimore			12 578					1	41 66
University Hospital*1	Baltimore	H. M Robinson, Sr	28	23 143	0	0	4	4	2	
Boston City Hospital*1	Boston	J G Downing	68	19 171	2	1	1	3	2	90
Massachusetts General Hospital*	Boston	C. N Frazier	305	16 475	5	5	3	4	3	41 66
Massachusetts Memorial Hospital*1	Boston	J G Downing and W L Fleming	20	8 076	0	0	1	1	1	50
University Hospital*1	Ann Arbor Mich.	A. C Curtis	823	8 889	6	4	2	12	3	124
City of Detroit Receiving Hospital*1	Detroit	L. W Shaffer	23	6 058	0	0	2	6	3	100
Minneapolis General Hospital*1	Minneapolis	C W Laymon	262	5 740	1	0	1	1	3	125
University of Minnesota Hospitals*1	Minneapolis	H. Michaelson	101		6	5	3	3	3	
Mayo Foundation	Rochester Minn	P A. O Leary					4	12	3	135
Ancker Hospital*1	St. Paul	J F Madden	144	3 009	6	4			3	
Meridian Public Health Treatment Center 1 2	Meridian, Miss.	W L. Bunch Jr	14 999				2	2	1	
Barnard Free Skin and Cancer Hospital	St Louis	R. S Weiss	51	11 114	1	0	1	2	3	125
Barnes Hospital*	St Louis								3	
St. Mary s Group of Hospitals*1	St Louis	G V Stryker	91	6 617	1	0	1	3	3	35
Mary Hitchcock Memorial Hospital*1	Hanover N H	W C. Lobitz Jr	154	6 117	0	0	1	2	2	163
Kings County Hospital*1	Brooklyn	C T Chiaramonte	694	9 810	21	4	2	2	1	
Buffalo General Hospital*	Buffalo	E D Osborne	18	2 875	0	0	1	1	2	25
Edward J Meyer Memorial Hospital*1	Buffalo	E D Osborne	102	9 577	3	3	1	3	3	100
Bellevue Hospital Div III IV—New York Univ *1	New York City	F C Combes	1 163	33 397	22	2			3	50
Metropolitan Hospital*1	New York City	E Traub	92	10 152	1	0	1	1	1	130
Mount Sinai Hospital*1	New York City	S M Peck	121	9 773	7	2	1	1	2	50
New York City Hospital*1	New York City	J J Eller	394	11 987	7	1	1	1	1	130
New York Hospital*	New York City	G M Lewis		17 751			1	1	3	25
New York Polyclinic Medical School and Hospital*	New York City	A. C Cipollaro	42	7 126			1	2	3	75
Presbyterian Hospital*1	New York City	J L. Miller		41,581			2	2	3	208
Roosevelt Hospital*1	New York City	G C Andrews						1	1	
St. Luke s Hospital*1	New York City	L. P Barker		9 870			1	1	2	60
University Hospital*1	New York City	M. Sulzberger	213	94 790	5	2		6	3	80
Duke Hospital*1	Durham N C	J L. Callaway	221	2,315	0	0	1	3	3	
Eastern Medical Center 2	Durham, N C								1	
Cincinnati General Hospital*1	Cincinnati	L Goldman	374	7,266	4	1	3	5	3	
City Hospital*1	Cleveland	H. N Cole Sr	528	9 127			1	3	3	67
Cleveland Clinic Hospital1	Cleveland	E W Netherton	225	17 941	4	2	1	6	3	
University Hospitals*1	Cleveland	H N Cole Sr	158	9 467	2		1	3	3	
University Hospital*1	Oklahoma City Okla.	C P Bondurant	58	2 247	2	1	2	2	1	50
University of Oregon Medical School Hospitals and Clinics*1	Portland Ore	L. B Kingery	40	4 806			1	2	2	85
Graduate Hospital of the University of Pennsylvania*1	Philadelphia	M. Samitz	73	6,387	0	0	2	2	2	
Hospital of the University of Pennsylvania*1	Philadelphia	D M Pillsbury	442	11 733	2	2		22	3	
Jefferson Medical College Hospital*	Philadelphia	H B Decker	44	7 365	0	0	2	2	1	
Pennsylvania Hospital*	Philadelphia	H. Beermen		7 545			1	1	1	20
Philadelphia General Hospital*1	Philadelphia	C Thomas	253		19	4	1	1	1	75
Skin and Cancer Hospital 1	Philadelphia	D M. Pillsbury and C S. Wright	438	47,500	6	0	4	4	2	50
Pittsburgh Medical Center*1 76	Pittsburgh								3	
Parkland Hospital*1	Dallas Tex	B Shelmire	35	1 463	2	0	2	2	1	
University of Texas Medical Branch Hospitals *1 John Sealy Hospital	Galveston Tex.	C S Livingood	109	9 008			2	6	3	50
University of Virginia Hospital*1	Charlottesville Va.	E. P Cawley	196	5,253	4	4	2	5	3	50
Medical College of Virginia-Hospital Division*1	Richmond, Va.	R. W Fowlkes		11 741					1	47
State of Wisconsin General Hospital*1	Madison Wis.	S A. M. Johnson	221	3,807	2	0	1	1	1	25

6 GASTROENTEROLOGY

The following services have been approved by the Council and the Subspecialty Board for Gastroenterology of the American Board of Internal Medicine
Hospitals, 11 Assistant Residencies and Residencies 14

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES ARMY									
Letterman Army Hospital*	San Francisco Calif	W R. Haas	926	506	2	2			

Numerical and other references will be found on page 462.

6 GASTROENTEROLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
VETERANS ADMINISTRATION									
Veterans Admin Hospital*[1]	Long Beach Calif	S J Stempien	1 358	556	38	38		2	
Veterans Admin Hospital*	Richmond Va		683		21	12	1	3	
NONFEDERAL									
Michael Reese Hospital*[1]	Chicago	H Necheles	258	2,268	3	3	2	2	
Lenox Hill Hospital*	New York City	H A Rafsky	374	1 073	32	6	2	2	50
Duke Hospital*[1]	Durham N C	J M. Ruffin							
Ohio State University Hospital*[1]	Columbus Ohio	C J DeLor							50
Graduate Hospital of the University of Pennsylvania*[1]	Philadelphia	H L Bockus	614	2 213	16	8	1	1	
Hospital of the University of Pennsylvania*[1]	Philadelphia			3 952					
Jefferson Medical College Hospital*	Philadelphia	H. A. Reimann	496	2 718	16	12	2	2	
Temple University Hospital*[1]	Philadelphia	H. Shay		697				2	

7 GENERAL PRACTICE

The following services are approved by the Council on Medical Education and Hospitals
Hospitals 73 Assistant Residencies and Residencies 250

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES ARMY									
Madigan Army Hospital*	Tacoma Wash		12 965	98,331	106	82	10	25	
UNITED STATES NAVY									
U S Naval Hospital*	Chelsea Mass.								
U S Naval Hospital*	Portsmouth Va								
NONFEDERAL									
Leo N Levi Memorial Hospital[1]	Hot Springs Ark	J Rosenzweig	2 465	14 868	75	16	2	2	250
Kern General Hospital[1]	Bakersfield Calif	J M Nicholson	11 479	14 382	532	297	21	21	340
Los Angeles County Hospital*[1]	Los Angeles	P Berman					6	6	165
Methodist Hospital of Southern California*[1]	Los Angeles	E G Eisen	10 416	6 718	268	83	2	2	100
Permanente Foundation Hospital	Oakland Calif								
Monterey County Hospital[1]	Salinas Calif	J C Sharp	3 016	27 839	117	92	6	6	423
St. Francis Hospital[1]	San Francisco	C Y Gates	10 877	22 030	348	74	7	14	265
Community Hospital of San Mateo County[1]	San Mateo Calif	W F Knorp	1 658	10 702	168	48	6	6	200
Sonoma County Hospital[1]	Santa Rosa Calif	B R. Barbour	217		61	7			
St Francis Hospital	Colorado Springs Colo	E F Dent	4 049	3 939	97	62	2	2	210
University of Colorado Medical Center									
Colorado General Hospital*[1]	Denver Colorado	C J Smyth					4	12	75
Denver General Hospital*[1]	Denver Colorado								
Charlotte Hungerford Hospital[1]	Torrington Conn.	J F Kilgus	2 211	943	38	20	2	4	75
Eastern Dispensary and Casualty Hospital	Washington D C								
St. Luke's Hospital*[1]	Jacksonville Fla								
St. Joseph's Hospital[1]	Alton Ill	H McCuistion	6 418	11 490	133	78	4	4	200
MacNeal Memorial Hospital*[1]	Berwyn Ill	R. W Edwards	10,511	6 827	281	99	6	6	175
Ravenswood Hospital*[1]	Chicago	H. T Haver	7 865	3 053	224	172	2	2	75
Methodist Hospital of Central Illinois*[1]	Peoria Ill	S M Scalzo	1 321	1,384	133	45	2	2	200
St. Francis Hospital[1]	Beech Grove Ind	W F Ramage	7 146	4 056	161	77	3	3	300
St Margaret's Hospital*	Hammond Ind								
St. Luke's Methodist Hospital*[1]	Cedar Rapids Ia.		10 658	8 054	248	114	6	6	225
Broadlawns Polk County Hospital*[1]	Des Moines Ia	A. A Toubes	4 585	37 687	314	104	3	3	125
University Hospitals*[1]	Iowa City	W Bean	21 097	31 702	563	411	6	6	50
St Francis Hospital*[1]	Wichita Kans.	C W Miller	2 030		48	21	2	4	
Wesley Hospital*[1]	Wichita Kans	G Tonn	7 781	9 998	151	66		3	150
Baton Rouge General Hospital	Baton Rouge La	H G Riche Jr	8,579		153	55	4	4	150
Cooley Dickinson Hospital[1]	Northampton Mass	L N Durgin	6 928	3,577	233	50	4	4	50
St. Joseph Hospital*	Flint Mich								
Borgess Hospital*[1]	Kalamazoo Mich.								
Mercy Hospital	Muskegon Mich.								
St. Joseph Mercy Hospital*[1]	Pontiac Mich	N N Steinberg	14 297	6 909	216	71	2	2	250
St. Luke's Hospital	Saginaw Mich	H. Matthews	3 815	951	55	29	1	2	135
James Decker Munson Hospital*	Traverse Mich	B B Bushong	5 371		141	73	2	3	213 93
Wyandotte General Hospital[1]	Wyandotte Mich.	L. A Comstock	1 897	9 832	153	44	1	2	300
Fairview Hospital[1]	Minneapolis	S C Andersen	8 180	3 112	206	64			200
Midway Hospital	St Paul Minn	A. Ritt	7,882		112	44		2	300
Missouri Methodist Hospital*	St. Joseph Mo	A. L Herman	3 921	433	265	50	1	1	250
Alexian Brothers Hospital	St. Louis		3 128	6 606	162	46	3	3	200
St. Anthony's Hospital*[1]	St. Louis						1	2	150
Murray Hospital	Butte Mont								
Albany Hospital	Albany N Y							4	50
Millard Fillmore Hospital*	Buffalo	M Cheplove					1	2	50
St Joseph Hospital[1]	Far Rockaway N Y	G Christmann	4 684	2 610	114	20	6	6	[illegible]00
Benedictine Hospital	Kingston N Y	W S Bush	1,202	408	74	34	1	1	300
Vassar Brothers Hospital*[1]	Poughkeepsie N Y		2 198	6,577	124	88	2	2	125
Peoples Hospital*[1]	Akron Ohio	P B DeMaine					2	2	125
Good Samaritan Hospital*[1]	Cincinnati	F M Williams	3 184		261		4	4	155
Lima Memorial Hospital*[1]	Lima Ohio	D L Steiner	7 911		230	56	4	4	225
St. Rita's Hospital*	Lima Ohio								
St. Vincent's Hospital*[1]	Toledo Ohio	M A Schnitker	7 753	1 730	266	97	2	4	125
Toledo Hospital*[1]	Toledo Ohio	C S Mundy	9 191	8,346	205	105	1	3	125
Bradford Hospital	Bradford Pa.	C L Luckett	1 639	5 935	95	21	1	1	200
Community General Hospital*	Reading Pa								
Madison Rural Hospital and Sanitarium[1]	Madison College Tenn	D J Johns					3	3	215
Brackenridge Hospital*[1]	Austin, Tex.	F A White	5 461	31 565	176	51	2	2	120
All Saints Hospital[1]	Fort Worth Tex.		6,285		130	47	4	4	250
City County Hospital*[1]	Fort Worth Tex.	J H Booth	6,512	20 179	353	119	3	4	150
St. Joseph's Hospital*[1]	Fort Worth Tex.	J F McVeigh	13 652	6,428	330	49	1	1	200

Numerical and other references will be found on page 462.

7 GENERAL PRACTICE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
St. Mary's Infirmary[1]	Galveston Tex.	E H Klatt	8 081	335	140	69	8	16	250
Shannon West Texas Memorial Hospital	San Angelo Tex.	C A. Kunath	6 154	19 885	129	34	4	4	200
Robert B Green Hospital*	San Antonio Tex.	W W Bondurant	5 268	46,510	476	114	1	2	150
Kings Daughters Hospital*	Temple Texas		3 119	31 723	68	35		1	300
Wichita General Hospital*	Wichita Falls Tex.	R. D McConchie	4 884		108	12	3	8	200
Riverside Hospital*	Newport News, Va								
Sheltering Arms Hospital[1]	Richmond Va.	R L. Bailey	2 607		76	48		1	100
Providence Hospital*[1]	Seattle Wash.	K. G Whyte	12 381	3 114	330	182	3	6	110
Evangelical Deaconess Hospital*	Milwaukee	L. M Peters	2 174		103		2	2	250
Milwaukee Hospital*[1]	Milwaukee	E. Daniels					1	1	125
St. Michael's Hospital*	Milwaukee		5 429	12 169	112	48	1	3	200

8 INTERNAL MEDICINE

The following services have been approved by the Council, the American Board of Internal Medicine, and the American College of Physicians through the Conference Committee on Graduate Training in Medicine.

Hospitals, 567 Assistant Residencies and Residencies, 4126

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES ARMY									
Letterman Army Hospital*	San Francisco Calif	J O Gillespie	1 912	2,305	54	46			
Fitzsimons Army Hospital*	Denver Colo	C W Tempel	247	510	37	34	1	10	
Army Medical Center*[27]	Washington D C	P S Fancher	1 938	57 432	37	32	5	21	
Brooke Army Medical Center*[28]	San Antonio Tex.	J G Knauer	9 151	11 151	135	125			
Gorgas Hospital*	Ancon Canal Zone	G M Stevenson	2,276	20,872	216	109	2	6	
Tripler Army Hospital*	Honolulu T H	C L. Leedham	6 404	16 088	44	40			
UNITED STATES NAVY									
U S Naval Hospital*	Oakland Calif	A R. Higgins	2 038	2,218	86	53		10	
U S Naval Hospital*	San Diego Calif	E F Evans	2,248	31 478	182	147	5	5	
U S Naval Hospital*	Great Lakes Ill.	W H Schwartz	3 895	640	21	18			
U S Naval Hospital*[1]	Bethesda Md	L L Norman	1,206	2 362	32	25	5	10	
U S Naval Hospital*[1]	Chelsea Mass	W W Kirk	2,214	14 418	107	48	2	4	
U S. Naval Hospital*[1]	St Albans N Y	H C Oard	1 794	2,516	33	24			
U S Naval Hospital*	Philadelphia Pa	J Love	3 990	40,344	331	167			
U S Naval Hospital*	Portsmouth Va	C L Ferguson	963	5,246	51	37			
UNITED STATES PUBLIC HEALTH SERVICE									
U S. Public Health Service Hospital*[1]	San Francisco Calif	F S French	2 103	22 977	79	61	2	5	
U S Public Health Service Hospital*[1]	Chicago Ill.	J G Telfer	1 018	2 707	35	26	2	2	
U S Public Health Service Hospital*[1]	New Orleans La.	R. H Smith	2 613	6 710	78	56	2	6	
U S Public Health Service Hospital*[1]	Baltimore Md	L L. Terry	2 041	14 435	54	39	2	6	
U S Public Health Service Hospital*	Boston Mass	W S Baum	1 304	1 158	44	29	1	3	
U S Public Health Service Hospital*[1]	Detroit, Mich.	R E Miller	1 117	11 762	46	38		1	
U S Public Health Service Hospital*[1]	Staten Island N Y	A. A. Doerner	2 361	16 099	80	54	3	9	
U S Public Health Service Hospital*[1]	Seattle Wash	R. L Griffith	2 333	8 734	136	101	2	5	
FEDERAL SECURITY AGENCY									
Freedmen's Hospital*[1]	Washington D C	J B Johnson	1 138	4 180	265	139	2	8	
VETERANS ADMINISTRATION									
Veterans Admin. Hospital[1]	Tuskegee Ala	E T Odom	2 363	1 726	125	66	8	18	
Veterans Admin Hospital*[1]	Long Beach Calif	F W S Modern	3 264	16 308	104	92	20	31	
Veterans Admin Hospital*[1]	Los Angeles Calif	R. O Egeberg	4 415	3 455	323	263	20	54	
Veterans Admin. Hospital	San Francisco Calif	G E Hein	1 981	2,520	135	95	12	21	
Veterans Admin. Hospital[1]	Fort Logan Colo	T P Sears	1,802		77	66	7	18	
Veterans Admin Hospital*	Newington Conn.	P Kunkel	1 611	2 521	101	79	10	18	
Veterans Admin Hospital[1]	Washington D C	L K. Alpert	1 389	3,579	127	107		13	
Veterans Admin Hospital[1]	Coral Gables Fla.	J M Rumball	2 511	8 176	179	149	4	10	
Veterans Admin Hospital[1]	Augusta, Ga	J R Kaufman	1 142	5 432	34	25	3	7	
Veterans Admin. Hospital*[1]	Chamblee Ga.	M. Michael Jr	7 068		120	92	8	15	
Veterans Admin. Hospital	Hines Ill	L. A. Baker	7 822		352	184		56	
Veterans Admin. Hospital[1]	Indianapolis Ind.	W A Christian	2 092		158	128	4	11	
Veterans Admin. Hospital[1]	Des Moines Ia.	D J Glomset	2 471		162	108		12	
Veterans Admin. Hospital[1]	Topeka Kans	R. Chess	1 888		56	44	4	12	
Veterans Admin. Hospital[1]	Wadsworth Kans	M Slavin	3 921		277	240	4	11	
Veterans Admin Hospital[1]	Wichita Kans.	T J Rankin	1 816		84	67	2	7	
Veterans Admin. Hospital[1]	Louisville Ky	J R Gott, Jr	3 144	8 136	175	76	8	18	
Veterans Admin Hospital	New Orleans, La.	C A. Jones	2 725	1 956	135	86	6	16	
Veterans Admin Hospital[1]	Fort Howard, Md.	P Padget	1 817	2 404	207	106	7	12	
Veterans Admin Hospital	Perry Point Md	S Goldgraben	1,235	227	11	7	2	4	
Veterans Admin Hospital	Boston (West Roxbury) Mass.	T A. Warthin	1 444	1 312	150	97	6	16	
Veterans Admin Hospital[1]	Framingham Mass	M. B Strauss	4 118	2,318	116	87	15	25	
Veterans Admin Hospital	Dearborn Mich	H J Kullman	4 466	17 873	273	170		25	
Veterans Admin Hospital[1]	Minneapolis Minn.	R V Ebert	3,201	10 618	191	160	33	33	
Veterans Admin Hospital[1]	Jefferson Barracks Mo	E D Wall	3 658		246	160	8	24	
Veterans Admin Hospital[1]	Lincoln Nebr	O V Calhoun	1 752		76	55	2	6	
Veterans Admin Hospital[1]	Albuquerque, N M.	W S Taylor	1 014		38	34	5	10	
Veterans Admin. Hospital[1]	Bath N Y	A. S Dowling[4]	3 034	111 600	151	115	6	6	
Veterans Admin Hospital[1]	Brooklyn, N Y	M G Goldner	2 162		202	125	10	27	
Veterans Admin Hospital[1]	Buffalo N Y	G M MacKenzie	2 693	4 124	116	64	12	22	
Veterans Admin Hospital[1]	New York City	B Straus	4 563	1 978	487	257	10	38	
Veterans Admin Hospital[1]	Cleveland Ohio	N P Shumway	2 837		201	131	26	26	
Veterans Admin. Hospital	Dayton Ohio	A. Tomasulo	2 754	81 035	206	135	21	33	
Veterans Admin Hospital*[1]	Oklahoma City Okla.	H. L. Schmidt, Jr	1 636		60	34	5	5	
Veterans Admin Hospital	Portland Ore	J H Mills	2 823		176	160	6	18	
Veterans Admin Hospital[1]	Aspinwall, Pa.	R. Schwartz	2 702		252	129	9	27	
Veterans Admin. Hospital	Columbia S. C	L. Birch	3,333	4 074	205	112	2	6	
Veterans Admin Hospital[1]	Memphis Tenn	J E Cottrell	5 548	18 933	200	151	10	29	

Numerical and other references will be found on page 462.

8 INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
Veterans Admin Hospital★[1]	Nashville Tenn.	R. France	3,314		97	67	15	15	
Veterans Admin Hospital [1]	Dallas Tex.	C W Sensenbach	1 768		105	69	9	14	
Veterans Admin Hospital★[1]	Houston Tex.	R A Wise	1 837		116	108	10	25	
Veterans Admin Hospital★[1]	McKinney Tex.	B Friedman	3 005	6 528	89	73	12	20	
Veterans Admin. Hospital★	Salt Lake City Utah	J C Nunemaker	1,335	2 102	66	62	4	10	
Veterans Admin Hospital [1]	White River Jct Vt	A. Yeomans	1 672	376	54	48	4	10	
Veterans Admin Hospital★[1]	Richmond Va.	J P Williams	4 838		164	79	10	30	
Veterans Admin Hospital	Seattle Wash								
Veterans Admin. Hospital [1]	Martinsburg W Va.	H Field Jr	1 164	378	89	60	6	6	
Veterans Admin Hospital [1]	Milwaukee Wis	M W Garry	832	6,392	74	54	25	25	
NONFEDERAL									
Carraway Methodist Hospital★[1]	Birmingham Ala.	E D Lineberry	985	5 888	58	25	3	6	150
Jefferson Hillman Hospital★[1]	Birmingham Ala.	T R Harrison	3 144	10 958	414	157	4	14	50
Lloyd Noland Hospital★	Fairfield Ala	G M Hankins	1 928	31,230	110	35	2	6	225
City Hospital★	Mobile Ala	G O Segrest	982	3 138	88	46	1	3	175
Memorial Hospital★[1]	Phoenix Ariz	H Caldwell	1 498	9 184	110	45	3	3	200
St. Mary s Hospital and Sanatorium★	Tucson Ariz	H E Thompson	2 827	771	116	44	6	6	175
Tucson Medical Center★[1]	Tucson Ariz	C L Robbins	612	274	16	8	4	4	200
Arkansas Baptist Hospital★[1]	Little Rock Ark.	F W Harris	2 140		166	29	2	2	
University Hospital★[1]	Little Rock Ark	B B Wells	657	13 324	87	55	1	9	75
Kern General Hospital★[1]	Bakersfield Calif	R C Dickmann	498	3 416	122	35	6	10	340
Herrick Memorial Hospital★[1]	Berkeley Calif	H I Harvey	1,238	1 581	119	70	1	2	100
San Joaquin General Hospital★[1]	French Camp Calif	G Wever	2 202	25,398	407	214	2	4	220
General Hospital of Fresno County★[1]	Fresno Calif	E Sorsky	1 829	16 769	368	106	2	3	206
Glendale Sanitarium and Hospital★[1]	Glendale Calif	H J Hoxie	2 789	6,577	195	102	1	4	181
Seaside Memorial Hospital★[1]	Long Beach Calif	E. M. Duvall	2 688	5 009	186	62	2	2	150
California Hospital★[1]	Los Angeles	W F Wessels	2 709	13 819	247	109	1	3	125
Cedars of Lebanon Hospital★[1]	Los Angeles		2 677	20 985	221	107	2	2	75
Hospital of the Good Samaritan★[1]	Los Angeles	W H Grishaw	2 729	14 165	180	71	2	6	150
Los Angeles County Hospital★[1]	Los Angeles	L E Bullock	22 184	61 085	2 557	879	31	31	165
Presbyterian Hospital—Olmstead Memorial★[1]	Los Angeles	W N Anderson	2 038		172	66	1	2	100
Queen of Angels Hospital★[1]	Los Angeles	M Blacker	3 139	2 720	339	127	1	3	100
St Vincent s Hospital★	Los Angeles	J C Ruddock	2 042		159	66	1	1	100
White Memorial Hospital★	Los Angeles	W E MacPherson	1,370	20 898	122	63		3	120
Highland Alameda County Hospital★[1]	Oakland Calif	H Rogers	2 807	9 699	559	157	4	5	145
Permanente Foundation Hospital★[1]	Oakland Calif	M F Collen	1 948	52 066	160	93		6	175
Samuel Merritt Hospital [1]	Oakland Calif	F B Taylor	1 161		71	43	2	2	100
Collis P and Howard Huntington Memorial Hospital★	Pasadena Calif	G T Burke	2,519	8,847	202	123	3	3	130
Mercy Hospital★[1]	San Diego Calif	E M Fetter	1 691	158	173	53	1	3	125
San Diego County General Hospital★[1]	San Diego, Calif	J M Rumsey	2 502	11 994	494	172	4	7	125
Children's Hospital★[1]	San Francisco	D W Atkinson	784	2 041	45	18	1	2	50
Franklin Hospital★[1]	San Francisco	C D Mote	1 587	8 962	76	41	2	4	100
French Hospital★[1]	San Francisco	D L Wilbur	3 628	6 428	165	49	1	2	100
Mary s Help Hospital★[1]	San Francisco	F Rochex	938	4 636	66	26	1	2	160
Mount Zion Hospital★[1]	San Francisco	A L Cohn and J J Sampson	1 546	9 149	136	76	3	6	75
St Joseph s Hospital★[1]	San Francisco	W W Port	2 237	1 006	157	30	1	1	100
St. Luke s Hospital★[1]	San Francisco	E L. Bruck	2,257	2 870	176	64	1	3	125
St. Mary s Hospital★[1]	San Francisco	J J McGinnis	1,565	4 471	99	33	2	5	100
San Francisco Hospital★[1]	San Francisco	L H Briggs and J K Lewis					3	9	175
Southern Pacific General Hospital★[1]	San Francisco		3 288		112	67	2	5	120
Stanford University Hospitals★[1]	San Francisco	A L Bloomfield	2,307	23,546	132	68	5	11	50
University of California Hospital★[1] [34]	San Francisco	W J Kerr	1,512	31,372	76	59		10	75
Santa Clara County Hospital★[1]	San Jose Calif	H Brink	1 449	8 167	44	36	2	4	235
Fairmont Hospital of Alameda County [1]	San Leandro Calif	H Rogers	1 462	31 050	330	117	3	5	145
Community Hospital of San Mateo County [1]	San Mateo Calif	W F Knorp	2,211	12 936	211	64		1	300
Santa Barbara Cottage Hospital★[1]	Santa Barbara Calif	H L Burtness	2 086	678	83	42	3	7	100
Harbor General Hospital★[1]	Torrance Calif	W P Martin and F S Kellogg	2 190	3 429	480	235	4	12	165
University of Colorado Medical Center									
Colorado General Hospital★[1]	Denver	G Meiklejohn	724	8 574	119	92	5	13	75
Denver General Hospital★[1] [24]	Denver	S S Kauvar	3 295	3,598	425	246	3	7	75
Mercy Hospital★[1]	Denver	W Vest	2 992	1 737	147	67	1	1	100
St. Anthony Hospital★[1]	Denver	J G Ryan	2,846	117	182	80	1	1	75
St. Joseph s Hospital★	Denver	M. Katzman	2 618		102	43	1	3	100
Colorado State Hospital [1]	Pueblo Colo	G R Curless	1 664	3 874	235	116	3	6	275
Corwin Hospital★	Pueblo Colo	R. H Finney	1 650	1 471	82	46	2	4	50
Bridgeport Hospital★[1]	Bridgeport Conn	I S Zaur	1 776	9 012	240	74	1	1	100
Hartford Hospital★[1]	Hartford Conn	G G Russell	4 470	10,337	429	214	4	6	60
St. Francis Hospital★	Hartford Conn	E J Turbert	3 517	11 334	381	96	2	2	75
New Britain General Hospital★[1]	New Britain Conn	J C White	1 773		154	81		2	120
Grace-New Haven Community Hospital									
Grace Unit★[1]	New Haven Conn	T Evans	1,240		139	44	1	3	40
New Haven Unit (University Service)★[1]	New Haven Conn.	F G Blake	1 959	21,569	334	143	5	10	40
Hospital of St. Raphael	New Haven Conn	T Evans and J Mignone	1,527	1,336	230	32	1	3	75
Lawrence and Memorial Associated Hospitals★[1]	New London Conn.	A. Labensky	1 485		149	9	2	3	125
Norwalk Hospital★[1]	Norwalk Conn	D L Ellrich	1 724	243	175	65	2	2	155
St Mary s Hospital★[1]	Waterbury Conn	W Finkelstein	3 634	1 842	266	72	2	4	160
Waterbury Hospital★[1]	Waterbury Conn	O J Bizzozero	4 804	6 754	210	105	2	6	100
Delaware Hospital★[1]	Wilmington, Del.	L. B Flinn	2 078	7 090	225	109	2	5	130
Memorial Hospital★[1]	Wilmington Del.	L B Flinn	1 267	2,210	141	87	3	4	125
Wilmington General Hospital★[1]	Wilmington Del	J R. Durham Jr	1 743	1 081	101	39	2	2	250
Central Dispensary and Emergency Hospital★[1]	Washington, D C	J Minor	1,320	4,204	106	45	2	5	75
Doctors Hospital★[1]	Washington D C	A McNitt	1 938		113	64	2	3	100
Gallinger Municipal Hospital★[1]	Washington D C	H H. Hussey and M Romansky	3 858	8,537	700	247	18	20	100
Garfield Memorial Hospital★[1]	Washington D C	L Thompson Jr	1 616	1 896	130	67	2	6	75
Georgetown University Hospital★[1] [35]	Washington D C	H. J Jeghers	2 747	18,375	181	119	6	23	25
George Washington University Hospital★[1]	Washington D C	T McP Brown	1,366	7 951	19	14	3	10	130
Providence Hospital★[1]	Washington, D C	M. J McInerney	1 771	20 746	172	72	1	3	75
Duval Medical Center★[1]	Jacksonville Fla	L. Limbaugh	1 777	11,347	266	116	2	3	125
Riverside Hospital [1]	Jacksonville Fla.	T Z Cason	905	6 917	42	10	1	1	150
St. Luke s Hospital★	Jacksonville Fla								
Jackson Memorial Hospital★[1]	Miami, Fla.	J H. Putman	3 764	23 198	561	291	6	11	60
Orange Memorial Hospital★[1]	Orlando Fla	M. Mallory	1,249		159	57	2	2	210
Tampa Municipal Hospital★	Tampa, Fla.	H. P Hampton	1 917	3 693	235	54	1	1	100
Crawford W Long Memorial Hospital★[1]	Atlanta Ga	L Henry	2 673	564	227	51	4	7	73

Numerical and other references will be found on page 462.

8 INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered	Total Residences Offered	Beginning Stipend (Month)
Grady Memorial Hospital★[1]	Atlanta, Ga	P B Beeson	2 684	73 785	358	287	10	16	20
Piedmont Hospital★[1]	Atlanta Ga.	J E Paullin	946		34	21	1	3	90
St. Joseph s Infirmary★[1]	Atlanta Ga.	M I. Lowance	1 244	916	68	22	1	3	170
University Hospital★[1]	Augusta Ga	V P Sydenstricker	2,266	6 008	268	51	4	7	40
Emory University Hospital★[1]	Emory University Ga	D F James	2,244		140	78	4	8	25
Alexian Brothers Hospital★[1]	Chicago	K W Ossendorff	1 728		195	66	1	1	125
American Hospital★[1]	Chicago	M Afremow	1 192	11 232	142	43	1	1	50
Augustana Hospital★[1]	Chicago	C Hedberg	2,305	2 150	165	16	4	9	75
Cook County Hospital★[1]	Chicago	E F Foley	18 097	23 291	3 954	622		36	32
Englewood Hospital★	Chicago	F Stenn	1 487	487	150	45	1	1	150
Grant Hospital★[1]	Chicago	A Vander Kloot	1 447	3 672	117	60	2	6	150
Henrotin Hospital★[1]	Chicago	F K Hick	898	1,558	58	24	1	1	100
Hospital of St Anthony de Padua★[1]	Chicago	F I Foran	1 784	150	126	42	1	1	150
Illinois Central Hospital★[1]	Chicago	L H Sloan	2 354	15 901	129	49	1	1	206 32
Illinois Masonic Hospital★[1]	Chicago	R H Hayes	2 358	9 657	212	94	3	6	50
Loretto Hospital★[1]	Chicago	S Plice	562		47	30	1	1	150
Lutheran Deaconess Home and Hospital★	Chicago	G O Solem	1 752		183	0	1	1	100
Mercy Hospital★[1]	Chicago	G O'Brien	1,880	21 905	125	41	2	4	25
Michael Reese Hospital★[1] [4]	Chicago	R. C Levy	2 161	33 732	126	72	3	10	25
Mount Sinai Hospital★[1]	Chicago	E B Freilich	2,518	33,244	182	64	2	4	50
Norwegian American Hospital★[1]	Chicago	M P Gethner	1 452		162	56	1	1	150
Passavant Memorial Hospital★[1]	Chicago	A R. Colwell	1 848	2 399	91	53	2	5	
Presbyterian Hospital★	Chicago	S H Armstrong Jr	3 929	23 679	217	130	6	15	25
Provident Hospital★[1]	Chicago	A. F Connor	735		99	27	1	3	50
Ravenswood Hospital★[1]	Chicago	L E Barryte	2,266	188	150	112	1	2	75
Research and Educational Hospitals★[1]	Chicago	R W Keeton	817	16 521	51	42	2	5	55
St. Anne s Hospital★[1]	Chicago	S G Plice	2,255	3 262	233	49	2	2	150
St. Elizabeth Hospital★	Chicago	L. J Latz	2 852		206	39	1	1	100
St. Joseph Hospital★[1]	Chicago	L. E Hines	1,232	1 448	103	43	2	2	125
St. Luke s Hospital★[1]	Chicago	F E Ball	3 749	8 658	226	163	6	17	25
St. Mary of Nazareth Hospital★	Chicago	C E Thompson	2 863	356	225	70	1	3	100
University of Chicago Clinics★[1]	Chicago	W Adams	2 336	23 020	132	104	8	20	25
Wesley Memorial Hospital★[1]	Chicago	P S Rhoads	3 906		159	83	3	9	25
Women and Children's Hospital★[1]	Chicago	O Zelezny	409	2 507	12	2	1	1	75
Woodlawn Hospital★[1]	Chicago	W E Gouwens	1 747	290	107	56	1	1	150
Evanston Hospital★[1]	Evanston Ill	L D Snorf	3,262	8,693	195	141	2	6	50
St. Francis Hospital★[1]	Evanston Ill.	M W Sbertoli	2 986	4 177	231	105	2	6	150
Little Company of Mary Hospital★[1]	Evergreen Park Ill.	W J Hagstrom	3 086		321	66	3	3	100
West Suburban Hospital★	Oak Park Ill	F Tice	1,557	1 036	250	94	1	3	150
St. Francis Hospital★[1]	Peoria Ill	G M Parker	2 663	21 425	286	105	1	2	100
Clinic Hospital	Bluffton Ind	A C Nickel	1,870		44	27	1	2	100
Indianapolis General Hospital★[1]	Indianapolis	C J Clark	1 475	24,249	267	111	4	12	80
Indiana University Medical Center★[1]	Indianapolis	J O Ritchey	1 991	7 599	148	123	3	7	150
Methodist Hospital★[1]	Indianapolis	R. Nay	2,596	5 506	341	121	3	9	260
St. Vincent s Hospital★[1]	Indianapolis	R Vandivier	1 438	6 105	167	62	1	3	200
St. Elizabeth s Hospital★[1]	Lafayette Ind	R. A Flack	2 454	11,215	174	40	1	3	150
Ball Memorial Hospital★[1]	Muncie Ind	C A Ball	1 396		184	65	2	2	150
Iowa Methodist Hospital★[1]	Des Moines	C A. Sones	2 159		163	64	2	4	100
University Hospitals★[1]	Iowa City	W Bean	2 854	1 772	191	141	8	20	50
University of Kansas Medical Center★[1]	Kansas City Kans	M. Delp	1 879	29 754	150	85	3	7	100
St. Francis Hospital★[1]	Wichita Kans	W C Goodpasture	3 958		202	73	2	2	
Wesley Hospital★[1]	Wichita Kans	G F Corrigan	2 336		115	36	1	3	
Good Samaritan Hospital★[1]	Lexington Ky	J Scott	1 802		136	46	1	1	75
St. Joseph Hospital★[1]	Lexington Ky	J W Scott	1 725		137	75	1	2	140
Louisville General Hospital★[1]	Louisville Ky	J M Kinsman	1 731	28 013	383	134	8	19	45
St. Joseph Infirmary★	Louisville Ky	R. S Dyer	2,506	324	195	65	1	3	150
Charity Hospital of Louisiana★[1]	New Orleans		8 124	94,343	1 097	422	8	29	25
Hotel Dieu Sisters Hospital★[1]	New Orleans	E de S Matthews	2 758	390	216	50	1	3	100
Ochsner Foundation Hospital★[1]	New Orleans	T Findley	2 192	24 783	55	37	6	18	125
Southern Baptist Hospital★[1]	New Orleans	J W Wells	4 384		259		1	3	125
Touro Infirmary★[1]	New Orleans	W R. Wirth	2 903	8 601	182	92	2	6	17
Shreveport Charity Hospital★[1]	Shreveport La	M D Hargrove	3 560	28 628	296	151	3	7	60
Maine General Hospital★[1]	Portland Me.	E R Blaisdell	1 648		127	59	3	5	50
Baltimore City Hospitals★[1]	Baltimore	C H Boyd	2 051	2 021	333	190	6	14	15
Church Home and Hospital★[1]	Baltimore	Z R. Morgan	769	1 120	77	41	1	2	75
Franklin Square Hospital★[1]	Baltimore	R H Siver	1 039	820	43	10	2	4	125
Hospital for Women★[1]	Baltimore	W Fort	735	4 639	53	20	1	3	50
Johns Hopkins Hospital★[26]	Baltimore	A M Harvey	3 760	28 495	297	205	14	24	41 66
Lutheran Hospital★[1]	Baltimore	L A. M. Krause	1 181	725	115	57	2	5	85
Maryland General Hospital★[1]	Baltimore	J E Legge	1 047	338	159	46	1	2	50
Mercy Hospital★[1]	Baltimore	H R Peters	1,345	6 405	126	75	2	5	75
Provident Hospital and Free Dispensary★[1]	Baltimore	E. B Jarrett	476	550	118	24	1	4	100
St. Agnes Hospital★	Baltimore	L P Gundry	1 534	242	98	53	1	3	75
St Joseph s Hospital★[1]	Baltimore	F J Geraghty	1 019	864	144	41	2	3	115
Sinai Hospital★[1]	Baltimore	M Sherry	1 803		189	75	4	6	35
South Baltimore General Hospital★[1]	Baltimore	G McLean	1 034	254	112	40	2	3	125
Union Memorial Hospital★[1]	Baltimore	R G Hills	1 684	2 083	201	104	4	6	40
University Hospital★[1]	Baltimore	M. C Pincoffs	1,285	12,274	105	40	6	12	
Beverly Hospital★	Beverly Mass.	A E Parkhurst	1 695	1,294	79	64	1	1	100
Beth Israel Hospital★[1]	Boston	H Blumgart	1 737	10,390	164	102	6	13	41 66
Boston City Hospital★[1] [36]	Boston		11 952	53 702	1 763	693	26	51	90
I and III Service		F Biguria							
II and IV Service		W B Castle							
V and VI Service		J A. Foley							
Carney Hospital★[1]	Boston	N A. Welch	824	1 933	115	23	1	2	75
Faulkner Hospital★[1]	Boston	J R. Graham	914		68	42	2	2	140
Lahey Clinic [1]	Boston	F N Allan	4 704	95 041	94	53	16	31	110
Massachusetts General Hospital★[1]	Boston	J H Means	1 843	17 631	275	191	9	13	41 66
Massachusetts Memorial Hospital★[1]	Boston	C S Keefer	1 456	6 653	98	58	4	7	50
New England Center Hospital★[1] [36]	Boston	S Proger	4,366		62	30		19	83 33
New England Deaconess Hospital [1]	Boston	H F Root	2,207		69	47	6	6	150
Peter Bent Brigham Hospital★[1]	Boston	G W Thorn	2,532	25 453	236	164	9	16	
Cambridge City Hospital★[1]	Cambridge Mass	J M Flynn	1,284	5 098	216	90	2	4	125
Mount Auburn Hospital★[1]	Cambridge Mass.	J H Townsend	1 139	3 518	144	71	3	3	75
Truesdale Hospital★[1]	Fall River Mass.	W Mason	842	4 336	87	37	1	1	75
Lynn Hospital★[1]	Lynn Mass.	A Covner	1,598	4 073	197	45	1	1	
Malden Hospital	Malden Mass.	E G Thorp	1 019		128	33	2	3	50
Newton Wellesley Hospital★[1]	Newton Lower Falls Mass.	E. E. Kattwinkel	1,552	2,308	139	61	1	1	100
Salem Hospital★[1]	Salem Mass.	S N Gardner	1,339	268	191	65	1	1	85
Springfield Hospital★[1]	Springfield Mass.	W C Barnes	1 980	9 426	207	67	3	6	50

Numerical and other references will be found on page 462.

8 INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend† (Month)
Memorial Hospital★[1]	Worcester Mass.	E. C Miller	1 931	657	139	54	1	2	100
St Vincent Hospital★	Worcester Mass	J T Brosnan	2 244		176	59	2	5	58 33
Worcester City Hospital★[1]	Worcester Mass	E Budnitz	2 341		348	152	2	2	107
St Joseph's Mercy Hospital★[1]	Ann Arbor Mich	M Marshall	2 175		131	66	3	5	125
University Hospital★[1]	Ann Arbor Mich.	C C Sturgis	3 771	114 594	244	172	10	39	121
Alexander Blain Hospital	Detroit	H. L Woodburne	1 103	14 732	23	8	1	3	150
City of Detroit Receiving Hospital★[1]	Detroit	G B Myers	3 518	56,434	747	361	7	19	217
Detroit Memorial Hospital★[1]	Detroit	W J Wilson Jr	2 780	2 981	208	85	2	6	150
Evangelical Deaconess Hospital★[1]	Detroit	L Stern	2 178		192	33	1	3	200
Florence Crittenton Hospital	Detroit	W B Cooksey	756		60	18	1	1	150
Grace Hospital★[1]	Detroit	D W Myers	4 934	15 892	359	131	4	4	225
Harper Hospital★[1]	Detroit	W D Mayer	3 924	17 365	340	134	4	8	205
Henry Ford Hospital★[1]	Detroit	F J Sladen	5 600	131 371	267	152	12	55	225
Jennings Memorial Hospital★[1]	Detroit	E K Carmichael	222		10	10	3	3	250
Mt Carmel Mercy Hospital★[1]	Detroit	H L. Smith	3,246		310	97	4	8	125
Providence Hospital★[1]	Detroit	M R McQuiggan	1 846		190	85	1	3	
Woman's Hospital★[1]	Detroit	B I Johnstone	891	160	79	32	1	1	150
Wayne County General Hospital and Infirmary★[1]	Eloise Mich	M. R McQuiggan	3 428		636	186	3	12	232
Hurley Hospital★	Flint Mich.	M S Chambers	4 711		354	124		6	161
Blodgett Memorial Hospital★[1]	Grand Rapids Mich	C B Beeman	669	133	94	44	1	3	200
Butterworth Hospital★[1]	Grand Rapids Mich	L P Ralph	1 583	732	190	103	1	3	125
St. Mary's Hospital★[1]	Grand Rapids Mich	R Vander Meer	1 296	22	179	46	1	1	125
Highland Park General Hospital★[1]	Highland Park Mich.	J K Bell	1 175	743	32	9	1	3	[illegible]
Bronson Methodist Hospital★[1]	Kalamazoo Mich	J V Fopeano	1 378	2 082	86	45	1	3	150
Edward W Sparrow Hospital★	Lansing Mich.	F Swartz	1 420	2,376	124	66	1	1	325
St. Lawrence Hospital★	Lansing Mich.	F Swartz	2 158	6 727	211	106			275
Pontiac General Hospital★[1]	Pontiac Mich	D Smith	2 670	2,204	189	63	2	4	100
Saginaw General Hospital★[1]	Saginaw Mich	B M Bullington	1 909	517	74	48	1	3	300
Asbury Hospital★[1]	Minneapolis	D R Hastings	2 372		138	56	1	1	150
Minneapolis General Hospital★[1]	Minneapolis	T Lowry	1 996	11,544	341	138	4	8	125
Northwestern Hospital★[1]	Minneapolis	H E Miller	1 948		145	88	2	2	175
St Barnabas Hospital★[1]	Minneapolis	A. W Shea	1 936		133	65	1	2	
University of Minnesota Hospitals★[1]	Minneapolis	C J Watson	1 208		116	91	58	58	
Mayo Foundation	Rochester Minn						45	140	125
Ancker Hospital★[1]	St Paul	J E Holt	1 429	12 841	176	147	3	9	91 50
Charles T Miller Hospital★[1]	St. Paul	E T Richards and C N Hensel	2 441	16 207	100	55		2	115
St Joseph's Hospital★[1]	St Paul	J M Ryan	1 632	519	9	1	1	1	125
St. Louis County Hospital★[1]	Clayton, Mo	R. Muether	1 462	23 076	245	142	3	6	95
Kansas City General Hospital No 1★[1]	Kansas City Mo	F S Morest	2 707	29 020	440	226	4	12	75
Menorah Hospital Medical Center★[1]	Kansas City Mo	A M Ginsberg	1 911		86	38	1	3	200
Research Hospital★[1]	Kansas City Mo	R. C Davis	3 369	3 453	170	84	1	3	150
St Joseph Hospital★	Kansas City Mo	T R Jones	3 146	4 001	163	97			
St Luke's Hospital★[1]	Kansas City Mo	J Danglade	3 323				1	3	150
St. Mary's Hospital★[1]	Kansas City Mo	H M Parker	1 605		107	57	1	1	125
Barnes Hospital★[1]	St Louis	W B Wood	4 412	42 103	279	170	9	31	
De Paul Hospital★	St Louis	L D Cassidy	1 706	2 891	198	66	1	3	150
Homer G Phillips Hospital★[1]	St Louis	J Smith	2 113	18 984	590	103		7	137 50
Jewish Hospital★[1]	St Louis	A E Strauss	3 371	12,519	254	97		6	100
Missouri Baptist Hospital★[1]	St Louis	R. M Smith	2 261		188	60	3	6	90
Missouri Pacific Hospital	St Louis	L B Harrison	3 981	48,212	85	31	4	6	100
St Anthony's Hospital★[1]	St. Louis	R. V Powell	1 565		106	53	1	1	150
St. John's Hospital★	St Louis	C H Neilson	1 994	5 296	170	72	1	3	75
St. Louis City Hospital★[1]	St Louis	R G Lasser and W A Knight	3 449	9 686	495	208	10	18	125
St Luke's Hospital★[1]	St Louis	J Jensen	1,208	2 683	107	48	1	1	[illegible]
St. Mary's Group of Hospitals★[1]	St. Louis	R. A. Kinsella	2 974	27 154	263	115	5	15	35
Montana Deaconess Hospital★	Great Falls Mont	F R Schemm						5	
Creighton Memorial-St Joseph's Hospital★	Omaha	H N Neu	3,229	33 458	213	71	1	3	100
University of Nebraska Hospital★[1] [38]	Omaha	H C Lueth	602	3 820	33	30	4	11	125
Mary Hitchcock Memorial Hospital★[1]	Hanover N H	S M Gundersen	1 751	16 150	78	61	1	7	163
Atlantic City Hospital★	Atlantic City N J	D W Scanlan	1,327	3 805	259	62	1	3	125
Cooper Hospital★	Camden N.J	R L Sharp	643		98	51	1	1	83 33
Englewood Hospital★[1]	Englewood N.J	W W Schmidt	938	1 144	172	48	1	1	100
Hackensack Hospital★[1]	Hackensack N.J	L W Black	2,661	6 148	306	68	3	3	191
Jersey City Hospital★[1]	Jersey City N.J	T J White	8 745	48 525	1 014	266	8	20	35
Monmouth Memorial Hospital★[1]	Long Branch N.J	F J Alltschul	1 906	1 426	245	62	2	2	200
Mountainside Hospital★[1]	Montclair N.J	C G Weston	2,894	6,556	240	92	1	3	100 71
Burlington County Hospital★[1]	Mount Holly N.J	P S MacNeal	599	379	72	39	1	1	100
Fitkin Memorial Hospital★[1]	Neptune N.J	L. F Albright	1 812	1,629	218	58	1	2	200
Newark Beth Israel Hospital★[1]	Newark N.J	J G Kaufman	2 003	12 655	245	73	1	2	50
Newark City Hospital★[1]	Newark N.J	R. J Mullin	3 746	2 972	671	182	1	3	100
St. Michael's Hospital★	Newark N.J	N A. Antonius	2,351	6 715	241	88	3	3	100
St. Peter's General Hospital★	New Brunswick N.J	J Sandella	1 122	883	139	46	1	1	150
Orange Memorial Hospital★[1]	Orange N.J		3 015	10 020	279	105	1	1	100
Paterson General Hospital★[1]	Paterson N.J	J E Leach	1 446	957	224	57	2	2	100
St. Francis Hospital★[1]	Trenton N.J	P Corrigan	1 482	2 297	199	38	2	4	200
Albany Hospital★[1]	Albany N Y	R. T Beebe	2,235	5 472	229	119	2	5	50
Binghamton City Hospital★[1]	Binghamton N Y	C S Benson	4 036	169	340	141	3	7	136 66
Beth El Hospital★[1]	Brooklyn	M Jacobi	778	9 830	90	18	1	3	100
Brooklyn Hospital★[1]	Brooklyn	E P Maynard	1 958	16,339	148	49	4	8	25
Coney Island Hospital★[1]	Brooklyn	M. Mensch	1 770	42 677	418	55	2	4	90
Cumberland Hospital★[1]	Brooklyn	S. P Bailey	2 136	25 485	365	100	3	4	60
Greenpoint Hospital★[1]	Brooklyn	J N Cohen	1 070	19,231	376	67	4	5	140
Jewish Hospital★[1]	Brooklyn	S. J Cohen	1 769	12 740	217	51	4	16	25
Jewish Sanitarium and Hospital for Chronic Diseases	Brooklyn								
Kings County Hospital★[1]	Brooklyn	H Feinblatt and W Dock	14,582	38,249	2,304	428	13	13	
Long Island College Hospital★[1]	Brooklyn	J H Crawford	2 279	5 858	231	62	4	5	25
Maimonides Hospital★[1]	Brooklyn	D R Seegal	2,080	24,343	223	60	4	5	75
Methodist Hospital★[1]	Brooklyn	L. L. Cabot, Sr and A T Mays	1,883	6,287	199	85	2	5	25
Norwegian Lutheran Deaconesses Home and Hosp ★[1]	Brooklyn	A. Andersen	1 127	841	114	53	2	2	75
St. Catherine's Hospital★[1]	Brooklyn	M A. Murphy and V Anello	1 434	3 191	172	60	2	3	75
St. John's Hospital★[1]	Brooklyn	L B Eckerson	1,543	1 918	97	21	1	1	120
St. Mary's Hospital★[1]	Brooklyn	H F Beakey	818	1 661	113	31	3	3	60
Wyckoff Heights Hospital★[1]	Brooklyn	J C Indelicato	1 019	1 938	178	53	1	4	
Buffalo General Hospital★[1]	Buffalo	J H Talbott	2 728	17 110	267	125	10	10	25
Deaconess Hospital★[1]	Buffalo	M. S Howland	2 215	1 137	249	52	1	3	125
Edward J Meyer Memorial Hospital★[1]	Buffalo	D K. Miller	3,378	14 089	396	143	7	18	100
Emergency Hospital of the Sisters of Charity★[1]	Buffalo	H. Brown	2 068	950	451	121	1	1	150
Millard Fillmore Hospital★[1]	Buffalo	J F Painton	2,541	724	283	135	2	6	60

Numerical and other references will be found on page 462.

8 INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Beginning Stipend (Month)
Clifton Springs Sanitarium and Clinic[1]	Clifton Springs N Y	B A Watson	2,204	4 767	55	25	1	3	100
Mary Imogene Bassett Hospital*[1]	Cooperstown, N Y	J Bordley III	707	5 477	47	28	1	4	83 33
Flushing Hospital and Dispensary*[1]	Flushing N Y	D J Swan	1 829	5 622	234	55	1	2	100
Meadowbrook Hospital*[1]	Hempstead, N Y	E C Jessup and B R Allison	1,243		215	108	4	6	135
Cornell University Infirmary[1]	Ithaca, N Y	M S Moore	1 602	1,567			2	2	208 33
Tompkins County Memorial Hospital[1]	Ithaca N Y	L C Mooney	1 378		87	29			208 33
Mary Immaculate Hospital*[1]	Jamaica N Y		1 482	1 063	93	22			
Queens General Hospital*[1]	Jamaica N Y	J R Reuling	5 183	32 673	1 189	423	13	16	80
Charles S Wilson Memorial Hospital*[1]	Johnson City N Y	E M Jones	2 702		221	79	3	6	150
Mount Vernon Hospital*[1]	Mount Vernon N Y	P Reznikoff	1 751	783	164	70	1	2	125
New Rochelle Hospital*	New Rochelle N Y	W Meredith	4 250	1 935	60	40	1	3	125
Bellevue Hospital, Div I Columbia University*[1]	New York City	D W Richards	2 086	19 521	214	69	6	11	80
Bellevue Hospital Div II, Cornell University*[1]	New York City	E H Luckey	2 031	34 997	179	53		10	80
Bellevue Hospital Div III New York University*[1]	New York City	W S Tillett	5 176	9 612	773	198	10	17	80
Bellevue Hospital Div IV New York University*[1] [7]	New York City	C F Wilkinson	1 576	19,262	254	101	12	36	80
Beth David Hospital*	New York City	H. A. Solomon	858	4 367	107	29	1	2	100
Beth Israel Hospital*[1] [3]	New York City	A. M Fishberg	1 550	7 875	140	59	4	5	50
Bronx Hospital*[1]	New York City	H. Wessler	1 787	13 797	143	31	2	6	35
Flower and Fifth Avenue Hospitals*[1]	New York City	L. J Boyd	1 230	4 029	90	15	3	5	
Fordham Hospital*[1]	New York City	B Pasquarelli	3 000	35 443	936	180	9	11	80
French Hospital*[1]	New York City								
Goldwater Memorial Hospital*[1]	New York City	R. D Beck and M Rosenbluth	877	1 941	147	33	7	11	80
Gouverneur Hospital*[1]	New York City	T Sanders	1,290	10 536	355	37	4	6	90
Harlem Hospital*[1]	New York City	A. Altschul	3 807	69 036	648	105	2	2	80
Hospital for Joint Diseases*[1]	New York City	M Vorhaus and M Dinnerstein	687	21 427	47	22	2	2	40
Hospital for Special Surgery	New York City	R. Freyberg	385	7,315	11	4	3	3	160
Jewish Memorial Hospital*	New York City	D Greenberg and M A Miller	1,367	3 041	149	36	1	1	100
Knickerbocker Hospital*[1]	New York City	S Johnson	2 327	5 039	225	38			100
Lebanon Hospital*[1]	New York City	D Greenberg and S Weiskopf	1 683		37	9	1	1	100
Lenox Hill Hospital*[1]	New York City	C E de la Chapelle and E A Lawrence	1 771	8 657	129	43	2	2	50
Lincoln Hospital*[1]	New York City	S Johnson	2 788	65 292	623	89	4	14	
Memorial Hospital[1]	New York City	R. W Rawson	584	7 988	99	59	12	24	80
Metropolitan Hospital*[1]	New York City	L J Boyd	4 511	40 719	592	118	5	8	80
Montefiore Hospital for Chronic Diseases*[1] [13]	New York City	L. Leiter	1,596	6 589	190	102	8	9	60
Morrisania City Hospital*[1]	New York City	S Biloon and D Greenberg	4 957	9 906	939	190	8	13	80
Mount Sinai Hospital*[1]	New York City	A. R. Gutman and I. Snapper	4 944	68 937	360	181	16	20	50
New York City Hospital*	New York City	H E Marks and R. E Gordon	3 979	34 942	512	138	2	4	80
New York Hospital*[1]	New York City	D P Barr	1 843	53 411	201	175	14	18	25
New York Infirmary*[1]	New York City	M E Manter	413	6 613	12	4	1	1	75
New York Polyclinic Medical School and Hospital*[1]	New York City	J Carroll	1 076	5 753	77	24	1	2	75
Presbyterian Hospital*[1]	New York City	R. F Loeb	6 182	33 769	254	104	12	18	208
Roosevelt Hospital*[1]	New York City	H F Shattuck and J M Freston	2,354		246	109	6	12	
St Barnabas Hospital for Chronic Diseases[1]	New York City	R Wegria	610	2 992	45	21	2	3	100
St. Clare s Hospital*	New York City	J P Croce	2 493	15 703	150	65	1	3	25
St. Francis Hospital*[1]	New York City	C G Hebermann	1 404		178	32	1	2	75
St Luke s Hospital*[1]	New York City	J H Keating	3 787	35 632	263	167	5	13	60
St Vincent s Hospital*[1]	New York City	F W Baldwin	2 937	20 490	384	164	8	15	50
Sydenham Hospital*[1]	New York City	E Appelbaum	727	3 390	73	20	1	1	140
University Hospital*[1]	New York City	C F Wilkinson Jr	1 592	30 973	117	34	9	31	80
United Hospital*[1]	Port Chester N Y	N Schwartz	1 340	1 099	120	33	1	2	150
Genesee Hospital*[1]	Rochester N Y	C Boller	1 629	7 079	185	108	1	4	41 66
Highland Hospital*[1]	Rochester N Y	E. Boble	1 465	1 119	153	77	2	4	100
Rochester General Hospital*[1]	Rochester N Y	L. Pulsifer	2 298	4 995	244	145	3	9	55
St Mary s Hospital*[1]	Rochester N Y	L La Palm	3 006	8 146	303	162	4	8	125
Strong Memorial Rochester Municipal Hospital*[1]	Rochester N Y	W S McCann	4 464	19 522	407	253	7	15	41 66
Ellis Hospital*[1]	Schenectady N Y	H E Reynolds	3 053		259	129	1	3	100
St Vincent s Hospital*	Staten Island N Y	H A. Cochrane	1 571	2 780	186	50	1	1	125
Staten Island Hospital*[1]	Staten Island, N Y	J J Silverman	1 575	1 721	45	25	1	1	200
Hospital of the Good Shepherd*[1]	Syracuse N Y	R. Lyons	1 394		165	81	7	15	125
Grasslands Hospital*[1]	Valhalla N Y	R. Heffner	984	10 680	186	119	2	5	175
White Plains Hospital*[1]	White Plains N Y	E. W Weber	1 378	1,212	105	54	1	2	75
Charlotte Memorial Hospital*[1]	Charlotte N C	C H. McKay	1 945	3 071	108	66	1	2	100
Duke Hospital*[1]	Durham N C	E A Stead	3 843	23 622	180	113	10	20	
Watts Hospital*[1]	Durham, N C	L H Manning Jr	2,593	17 485	115	40	2	4	50
Rex Hospital*[1]	Raleigh N C	W B Dewar	3 039	8 689	160	38	1	3	150
James Walker Memorial Hospital*[1]	Wilmington N C	S. E. Warshauer	2 742	5,597	132	33	1	3	125
City Memorial Hospital*[1]	Winston-Salem N C	J P Davis	1 191	2 777	104	29	1	4	150
Kate Bitting Reynolds Memorial Hospital*	Winston-Salem N C	E. L. Davis	1 977	4 788	195	41	1	3	150
North Carolina Baptist Hospital*[1]	Winston-Salem N C	G T Harrell	2 575	16 833	153	72	12	24	41 66
Bismarck Hospital	Bismarck, N D	C H. Peters	1 443	62 456	83	37	2	2	300
St. Luke s Hospital	Fargo N D								
City Hospital*[1]	Akron Ohio	R. Wilson	4 515	9,218	425	122	2	5	140
Peoples Hospital*[1]	Akron, Ohio	R. F Jukes	1 684	5 767	127	56	2	5	200
St Thomas Hospital*[1]	Akron Ohio	P R. Adams	2,215	2,210	120	36	1	2	200
Aultman Hospital*[1]	Canton Ohio	J E Aten	2 835	745	196	104	2	4	125
Mercy Hospital*[1]	Canton Ohio	L B Hamilton	2 055	894	178	52	2	5	125
Christ Hospital*	Cincinnati	W O Ramey	1,369	7,502	169	52	1	3	125
Cincinnati General Hospital*[1] [10] [14]	Cincinnati	M. A. Blankenhorn	2 293	37 445	505	251	11	18	
Deaconess Hospital*[1]	Cincinnati	L B Owens	3,263		147	37	3	3	150
Good Samaritan Hospital*[1]	Cincinnati	L P Stickley	3,506	6,383	261	118	2	6	155
Jewish Hospital*[1]	Cincinnati	R. C Rothenberg	4 823	5 158	293	159	5	9	60
City Hospital*[1]	Cleveland	R. W Scott	2 403	33 852	533	234	8	18	67
Cleveland Clinic Hospital[1]	Cleveland	A. C Ernstene	1 460	48 413	96	60	5	51	
Fairview Park Hospital*[1]	Cleveland	H. C King	1,591	999	109	35	1	2	100
Lutheran Hospital*	Cleveland	M. August	1,292		98	49	1	3	85
Mount Sinai Hospital*[1]	Cleveland	A. J Patek Jr	2 073	25,239	238	112	4	5	100
St. Alexis Hospital*[1]	Cleveland	H. V Paryzek	2 780	3,513	190	62	2	4	100
St. John s Hospital*[1]	Cleveland	E J Stefanic	1 592	2 392	162	43	2	4	110
St Luke s Hospital*[1]	Cleveland	A. D Nichol	3,375	17 994	219	90	2	5	100
St. Vincent Charity Hospital*[1]	Cleveland	C S Stone	1,222	18 690	108	21	2	6	75
University Hospitals*[1]	Cleveland	J T Wearn	4 002	30 461	359		20	35	
Mount Carmel Hospital*[1]	Columbus Ohio	P T Knies	1 694	467	164	78	2	5	135

Numerical and other references will be found on page 462.

8 INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
University Hospitals									
Ohio State University Hospital★1	Columbus Ohio	B K. Wiseman	1 195	20 716	132	117	8	14	50
St. Francis Hospital	Columbus Ohio								
White Cross Hospital★1	Columbus Ohio	R. W Kissane	1 770		184	56	1	2	100
Miami Valley Hospital★	Dayton Ohio	R. M. Craig	2,857	4 486	304	129	1	3	75
Huron Road Hospital★1	East Cleveland Ohio	E A Marshall	1 189	3,214	139	58	3	6	150
Lakewood Hospital★	Lakewood Ohio	J T Ledman	921	1,880	143	48	4	4	100
St. Rita's Hospital★1	Lima Ohio	F G Maurer	2,364	853	204	76	1	3	100
Maumee Valley Hospital★	Toledo Ohio	J L Kobacker	1 168	6 881	225	81	4	7	125
Mercy Hospital★1	Toledo Ohio	G W Bascom	2,212	1,580	89	61	1	1	137 50
St. Vincent's Hospital★1	Toledo Ohio	M A. Schnitker	2 027		190	65	2	5	125
Toledo Hospital★1	Toledo Ohio	C S Mundy	2 448	1,540	165	78	2	4	125
St. Elizabeth's Hospital★	Youngstown Ohio	M W Neidus	2 491	1,585	228	66	1	2	110
Youngstown Hospital★1 15	Youngstown Ohio	W H Bunn	6 325	889	434	213	2	8	125
St. Anthony Hospital★	Oklahoma City	P M McNeill	2 665	1 108	239	91	1	2	150
University Hospitals★1	Oklahoma City	R. Q Goodwin	1 004	15 321	121	47	7	7	50
Wesley Hospital★1	Oklahoma City	W W Rucks Jr	2 310	5 625	130	85	1	1	150
Hillcrest Memorial Hospital★1	Tulsa Okla	H A Brocksmith	2 018		126	43	1	1	75
St John's Hospital★1	Tulsa Okla	S Goodman	2 714		179	70	1	3	150
Emanuel Hospital★1	Portland Ore	G McCutchan	2 562		236	105	1	3	85
Good Samaritan Hospital ★1	Portland Ore	E D DuBois	4 979		259	138	1	1	145
Providence Hospital★1	Portland Ore	E Osgood	2 287		220	115	1	3	75
St. Vincent's Hospital★1	Portland Ore	L C Brill	3 657		203	110	1	8	75
University of Oregon Medical School Hospitals and Clinics★1	Portland Ore	H P Lewis	1 673	26,225	274	192	2	6	85
Abington Memorial Hospital★1	Abington Pa.	J T Beardwood Jr	1,589	8,352	178	82	1	2	50
Allentown Hospital★1	Allentown Pa.	C Kelchner	2 403	2 767	321	194	1	1	100
Sacred Heart Hospital★1	Allentown Pa	A W Dubbs	2 194	5 267	258	83	1	1	150
St. Luke's Hospital★1	Bethlehem Pa	L I Fisher	2 498	1,258	227	108	1	2	100
Bryn Mawr Hospital★1	Bryn Mawr Pa	W W Dyer	1 436	892	173	96	1	2	75
George F Geisinger Memorial Hospital★1	Danville, Pa.	W J Stainsby	2,560	20 753	108	57	2	6	100
Easton Hospital★	Easton Pa								
Hamot Hospital★1	Erie Pa	G F Stoney	1,245	2,371	109	39	1	1	150
Westmoreland Hospital★1	Greensburg Pa.	E Highberger Jr	1,323		123	28			
Harrisburg Hospital★1	Harrisburg Pa	F F D Reckord	2 107	5,819	283	113	1	2	
Harrisburg Polyclinic Hospital★1	Harrisburg Pa.	A. W Cowley	2,238	1 738	191	49	1	2	200
Episcopal Hospital★1	Philadelphia	S R Vogel and L A Soloff	1,277	5 724	173	83	2	6	50
Germantown Dispensary and Hospital★1	Philadelphia	C C Watt Jr and R. L Langdon	2,202	6 065	228	87	1	3	50
Graduate Hospital of the University of Pennsylvania★1	Philadelphia	H L. Bockus	808	7 129	61	23	3	4	
Hahnemann Hospital★1	Philadelphia	C L. Brown	2 388	27 091	278	128	1	4	50
Hospital of the University of Pennsylvania★1	Philadelphia	F C Wood	4 625	4 957	198	128	20	20	
Hospital of the Woman's Med College of Pennsylvania★1 39	Philadelphia	W G Leaman Jr	689	2,391	6	3	1	2	60
Jefferson Medical College Hospital★	Philadelphia	H A. Reimann	2,581	38 909	214	142	14	14	
Jewish Hospital★1	Philadelphia	J C Doane and H L Goldburgh	2,582	13 738	236	84	3	6	50
Lankenau Hospital★1	Philadelphia	E L Bortz and F L Hartmann	1 741	1 295	156	81	2	2	50
Methodist Episcopal Hospital★1	Philadelphia	H R. Keeler and H F Robertson	811	1 659	111	29	1	1	100
Mount Sinai Hospital★1	Philadelphia	A. L Rubenstone and T H Mendell	1 786	13 130	126	80	4	4	50
Pennsylvania Hospital★	Philadelphia		2,366	5 819	241	129	8	9	20
Philadelphia General Hospital★1 17	Philadelphia	D W Kramer	5 044		1 069	578	6	16	75
Presbyterian Hospital★1	Philadelphia	T G Schnabel and J W Hundley	1 951	10,865	181	110	1	3	25
Temple University Hospital★1	Philadelphia	R. A Kern	2 501	11 309	207	73		9	
Woman's Hospital★1	Philadelphia	I. M Balph and M H Easby	795	5 026	33	13	1	2	100
Allegheny General Hospital★1	Pittsburgh	C W W Elkin	401	5,369	33	10	2	4	100
Elizabeth Steel Magee Hospital	Pittsburgh	J D Heard	1 483	421	114	51	1	4	41 66
Mercy Hospital★1	Pittsburgh	W W G MacLachlan	2,216	4 447	118	27			100
Montefiore Hospital★1	Pittsburgh	Y D Koshoff	1 654	3 947	160	86	2	7	50
Presbyterian Hospital★1	Pittsburgh	A H Colwell	2 607	6 473	211	62			41 66
St. Francis Hospital★1	Pittsburgh		1 631	6 439	205	32			
St. Margaret Memorial Hospital★	Pittsburgh								
Western Pennsylvania Hospital★1	Pittsburgh	F A Evans	3 467	4 465	348	77	2	4	100
Reading Hospital★1	Reading Pa.	H P Shellabear	1 476	1,250	260	112	2	2	125
St. Joseph's Hospital★	Reading Pa.	M Wassersweig	1 652		146	83			
Robert Packer Hospital★1	Sayre Pa.	S B Conklin	3 158	9 799	158	88	2	8	150
Scranton State Hospital★	Scranton Pa.	F W Stevens	1,555	3 470	229	63	1	1	272
Wilkes-Barre General Hospital★1	Wilkes-Barre Pa.	G E Baker	2 652	1,236	235	50	1	1	100
York Hospital★1	York Pa.	H B Thomas	2,228	1,250	294	95	1	1	
Rhode Island Hospital★	Providence R. I	M Fulton	3 144	13 050	428	196	4	5	60
Roper Hospital★1	Charleston, S C	V Moseley	3 485	16 677	235	99	2	6	50
Columbia Hospital★1	Columbia, S C	A. L Josey	2,388	13,274	191	50	1	2	125
Baroness Erlanger Hospital★1	Chattanooga Tenn	J L Bibb	3 629	5,280	318	82	3	6	75
Knoxville General Hospital★	Knoxville Tenn	R. B Wood	1,350	4,292	168	49		2	95
Baptist Memorial Hospital★	Memphis Tenn.	C J Deere	4 463	1 417	324	90	1	2	75
John Gaston Hospital★	Memphis, Tenn.	C H. Sanford	2,464	28 645	585	388	4	11	85
St. Joseph Hospital★1	Memphis, Tenn.	S Blackwell	2 931	631	218	44	1	8	100
George W Hubbard Hospital of Meharry Medical College★1	Nashville Tenn.	F T Billings	1 085	5 080	137	70	1	2	75
Nashville General Hospital★	Nashville Tenn	T F Frist	1 175	8,447	186	57	2	5	100
St. Thomas Hospital★1	Nashville Tenn.	W R. Cate	1,505		130	45	2	3	100
Vanderbilt University Hospital★1	Nashville Tenn	H J Morgan	3 171	23,825	166	93			35
Baylor University Hospital★1	Dallas Tex.	H. M. Winans	2 998	2,596	235	87	1	8	50
Methodist Hospital★1	Dallas Tex	H Donald	1,534	1 020	132	28	2	4	100
Parkland Hospital★1 33	Dallas Tex.	C H Burnett	1 187	14 489	209	97	5	9	
St Paul's Hospital★1	Dallas, Tex.	N J Harris	4 026	4,369	200	64	2	3	100
Harris Hospital★1	Fort Worth Tex.	J B Fershtand	2 851	896	121	40		3	125
University of Texas Medical Branch Hospitals★1 John Sealy Hospital	Galveston, Tex.	C T Stone	2 006	22 665	222	144	4	12	50
Hermann Hospital★1	Houston Tex.	J A. Greene	3,595	5 096	263	95	3	9	75
Jefferson Davis Hospital★	Houston Tex.	J A. Greene	1,510	38,142	361	108	4	10	25
M D Anderson Hospital for Cancer Research 1	Houston Tex.	C Howe	1,246	13,247	15	12		4	150
Memorial Hospital	Houston Tex.	P V Ledbetter	2 996		159				
Methodist Hospital★1	Houston Tex.	H W Cummings, Jr	1,238	147	98	49			75
Southern Pacific Hospital	Houston Tex.	M D Levy Sr	683	16 931	15	8	1	2	125
Santa Rosa Hospital★	San Antonio Tex.	M. M. Minter	3 002	3,334	264	80	1	1	150
Scott and White Memorial Hospital★1	Temple Tex.	V M. Longmire	2,394		68	21	8	24	200

Numerical and other references will be found on page 462.

8 INTERNAL MEDICINE—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
Wichita Falls Clinic Hospital*	Wichita Falls Tex	O B Kiel	2 941	25 517	54	20	1	1	300
Thomas D Dee Memorial Hospital*1	Ogden Utah	D M Petersen	1 790		93	72	2	2	150
Dr W H Groves Latter Day Saints Hospital*1	Salt Lake City	T C Bauerlein	3 851	3 972	242	83	1	3	125
Holy Cross Hospital*1	Salt Lake City	F Clausen	1 046	500	74	22	1	1	75
Salt Lake County General Hospital*1	Salt Lake City	M M Wintrobe	1,833	17 013	168	109	3	15	50
Bishop DeGoesbriand Hospital*1	Burlington Vt.	C M Terrien	1 443	2 117	76	37	1	2	100
Mary Fletcher Hospital*1	Burlington Vt.	E L Amidon	1 152	693	61	34	2	4	110
University of Virginia Hospital*1	Charlottesville Va	W Parson	3 015	11 839	190	93	8	12	50
Chesapeake and Ohio Hospital	Clifton Forge Va	J R. Beckwith	3 617	8 037	97	35	2	5	100
Riverside Hospital*1	Newport News Va	W A Read	1,574		112	41	1	1	175
De Paul Hospital*1	Norfolk Va	W B Martin	2 357	1 983	140	75	1	3	125
Norfolk General Hospital*1	Norfolk, Va	J F Waddill	2 153	5,281	199	71	4	8	125
Johnston Willis Hospital*1	Richmond Va	J M Hutcheson	2 419		135	66	1	2	175
Medical College of Virginia—Hospital Division*1	Richmond Va	W P Porter	3 860	8 725	404	144			46 50
Jefferson Hospital*	Roanoke Va	G B Lawson	1 050	4 441	84	25	1	1	175
Lewis Gale Hospital*1	Roanoke Va	C D Nofsinger and R Jones	1 470	15 831	72	39	1	2	150
Doctors Hospital*	Seattle Wash	C I Krantz	2 198		169	102	2	2	125
King County Hospital Unit No 1 (Harborview)*1	Seattle Wash.	R H Williams	1,569	10 440	369	213	5	10	100
Providence Hospital*1	Seattle Wash	R. F Foster	1 976	1 425	130	76	2	4	110
Swedish Hospital*1	Seattle Wash	K Soderstrom	2,279		141	70	1	1	100
Virginia Mason Hospital*1	Seattle Wash	R L King	2 401	15 487	164	96	2	6	75
Deaconess Hospital*1	Spokane	R M Schulte	2 393		163	77	1	1	150
St Luke s Hospital*1	Spokane	J Delaney	2 067		142	77	1	1	125
Northern Permanente Hospital 1	Vancouver Wash	E W Saward	416	17 958	19	14	1	1	300
Charleston General Hospital*1	Charleston W Va	W A. Thornhill	2 149	2 318	105	44	2	5	125
Chesapeake and Ohio Hospital 1	Huntington W Va	W E Bray Jr	2 023	13 718	93	26	1	3	115
St. Mary s Hospital*1	Huntington W Va	L I Hirschman	2 635	5 404	55	37	1	1	125
La Crosse Lutheran Hospital*1	La Crosse Wis	T E Gundersen	2 390		123	53	1	1	150
Madison General Hospital*1	Madison Wis	J K Curtis	1 024		110	44	1	3	50
St Mary s Hospital*1	Madison Wis	J C Moore	1 852		134	45	1	3	175
State of Wisconsin General Hospital*1	Madison Wis	O O Meyer	3 467	18 823	141	113	5	15	25
St Joseph s Hospital*1	Marshfield Wis.	K H Doege	1,530	821	92	32	1	3	300
Columbia Hospital*	Milwaukee	E W Mason	1 053		74	49	3	3	75
Milwaukee County Hospital*1	Milwaukee	J Shaiken	5 969	70 345	643	279	6	16	50
Milwaukee Hospital*1	Milwaukee	E. Daniels	1 728	1 523	98	53	1	3	125
Mount Sinai Hospital*	Milwaukee	R A. Frisch	1 316	5 359	117	47	1	3	100
St Joseph s Hospital*	Milwaukee	S. Rosenthal	3 190		230	84	1	3	75
Queen s Hospital*1	Honolulu T H	H L Arnold Sr	2 774	14 425	212	143	4	7	100
San Juan City Hospital*1	San Juan P R	R. S Diaz Rivera	1 108	16 560	154	60	2	5	150

9 MALIGNANT DISEASES

The following services are approved by the Council on Medical Education and Hospitals
Hospitals, 19 Assistant Residencies and Residencies, 100

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
VETERANS ADMINISTRATION									
Veterans Admin Hospital	Hines Ill	T H Clarke	2 168		275	146			
NONFEDERAL									
Presbyterian Hospital—Olmsted Memorial*	Los Angeles Calif	C H Weaver	1 057		80	21	1	1	100
Collis P and Howard Huntington Memorial Hospital*	Pasadena Calif	G S Sharp	570	1 395	62	43	1	1	130
Michael Reese Hospital*1	Chicago Ill	E M Uhlmann	807	4 246	119	71	2	2	
Massachusetts General Hospital*	Boston		4 100						
Pondville Hospital	Walpole Mass.	E M Daland	1 016	10 052	55	38	4	5	530
Westfield State Sanatorium	Westfield Mass	F S Hopkins	562	7 709	61	43	0	2	395 61
University of Minnesota Hospitals*	Minneapolis Minn	O H Wangensteen							
Ellis Fischel State Cancer Hospital 1	Columbia Mo	J J Modlin	1 355	7 895	43	33			
Barnard Free Skin and Cancer Hospital	St Louis	A N Arneson and C F Sherwin	958	10 610	9	3	4	4	125
Jersey City Hospital*1	Jersey City N J	J B Faison	247	2 714	49	6	1	2	35
Roswell Park Memorial Institute 1	Buffalo N Y		2 100	29 174	92	93		7	272 50
Meadowbrook Hospital*	Hempstead N Y	N Treves	621	6 100	179	76	1	2	135
Memorial Hospital	New York City	L F Craver	6 877	78 139	235	127	24	52	80
Montefiore Hospital for Chronic Diseases*1	New York City	D Laszlo	804	5 443	398	171	5	6	60
New York City Cancer Institute 1	New York City	B H Colden	958	5 363	615	71	5	7	130
American Oncologic Hospital 1	Philadelphia	J W Bransfield	978	11 008	13	8	4	4	200
Jeanes Hospital 1	Philadelphia		1 502	7 499	68	39	3	3	200
M D Anderson Hospital for Cancer Research 1	Houston Tex	R L. Clark Jr and G H Fletcher	2 144	22 447	55	40	2	3	150

10 NEUROLOGICAL SURGERY

The following services are approved by the Council and the American Board of Neurological Surgery
Hospitals 91 Assistant Residencies and Residencies 218

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
VETERANS ADMINISTRATION										
Veterans Admin. Hospital*1	Long Beach Calif	J D French	1,250	1 607	16	18	2	4	3	
Veterans Admin. Hospital*1	Los Angeles Calif	C Rand	654	6[illegible]	5	5	2	2	1	
Veterans Admin Hospital	San Francisco Calif	O W Jones	340	537	14	10	1	3	3	

Numerical and other references will be found on page 462

10 NEUROLOGICAL SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
Veterans Admin Hospital*[1]	Chamblee Ga	H. D Smith	401		22	15	1	2	1	
Veterans Admin Hospital	Hines Ill	L. Davis	1 053		53	34		4	3	
Veterans Admin Hospital[1]	Wadsworth Kans.	F A Carmichael Jr	303		0	4	1	2	2	
Veterans Admin Hospital[1]	Louisville Ky	E E Grantham	394	718	5	4	1	1	1	
Veterans Admin Hospital[1]	Framingham Mass	J H Drew	337	560	29	22	1	2	2	
Veterans Admin Hospital[1]	Minneapolis Minn	L. A French	275	25	14	13	2	2	3	
Veterans Admin Hospital[1]	New York City	P K Sauer	411	252	20	15	1	4	3	
Veterans Admin Hospital[1]	Cleveland Ohio	A. Grino	376	432	19	13	1	1	1	
Veterans Admin Hospital	Memphis Tenn	N Gotten	703		40	32	1	3	1	
Veterans Admin Hospital[1] [43]	White River Jct Vt	H L Heyl	453	933	15	14	1	2	2	
Veterans Admin Hospital*	Richmond Va	J L Ulmer	423		21	15	3	3	1	
NONFEDERAL										
Jefferson Hillman Hospital*[1]	Birmingham Ala	G Galbraith	727	526	61	30	0	1	1	50
Cedars of Lebanon Hospital	Los Angeles	T J Putnam					1	1	1	
Los Angeles County Hospital*[1]	Los Angeles	C W Rand	2 263	2 020	198	27	4	4	3	165
White Memorial Hospital*	Los Angeles	P J Vogel	328	378	10	13	2	2	2	170
Franklin Hospital*	San Francisco	H A Brown	912	730	18	14		2	3	100
University of California Hospital*[1]	San Francisco	H C Naffziger	603	1 346	27	24		3	3	75
Hartford Hospital*[1]	Hartford Conn	B B Whitcomb	940	393	38	24	1	2	3	50
St. Francis Hospital*	Hartford Conn	R. C Buckley	852	489	33	25	1	1	1	75
Grace-New Haven Community Hospital New Haven Unit (University Service)*[1]	New Haven Conn	W German	857		26	18		3	3	40
George Washington University Hospital*	Washington D C	J W Watts	276		0	8	1	1	2	130
St Vincent's Hospital*[1]	Jacksonville Fla	J G Lyerly	299		11	5	1	1	1	125
Emory University Hospital*	Emory University Ga	E F Fincher	533		19	10	1	1	3	50
Augustana Hospital*	Chicago	W A Gustafson	260		12	10	1	1	1	75
Chicago Memorial Hospital*	Chicago	P C Bucy	357	1 872			1	2	2	200
Cook County Hospital*[1]	Chicago	M Tinsley	2 020	859	152	3		1	1	32
Illinois Neuropsychiatric Institute	Chicago	E Oldberg					1	3	3	
Mercy Hospital*[1]	Chicago	H C Voris	300	135	70	17	1	1	2	25
Passavant Memorial Hospital*	Chicago	L Davis	600	1 700	12	8				
Presbyterian Hospital*	Chicago	A. Verbrugghen	254	821	6	6	1	2	2	25
St. Luke's Hospital*[1]	Chicago	E Oldberg	273		27	18		1	3	25
University of Chicago Clinics*	Chicago	T B Rasmussen	273	1 328	11	7	1	4	2	25
Wesley Memorial Hospital*[1]	Chicago	J Martin	398		20	0	1	3	3	45
Indiana University Medical Center*[1]	Indianapolis	R Heimburger	187	607	13	0		1	1	200
University Hospitals*[1]	Iowa City	R Meyers	514	557	43	38	2	6	3	50
University of Kansas Medical Center*	Kansas City, Kans	F R Teachenor	293	240	26	23		1	3	100
University of Louisville Hospitals[40]	Louisville Ky	R G Spurling	191	1 549	48	21		1	2	250
Ochsner Foundation Hospital*[1]	New Orleans	D H Echols	288	1 446	15	10	1	2	2	125
Maine General Hospital*[1]	Portland Me	G K Maltby	401	620	18	10		1	1	50
Johns Hopkins Hospital*	Baltimore	A E Walker	938	864	37	31		3	3	41 66
University Hospital*[1]	Baltimore	C Bagley Jr	489	681	38	20	1	5	3	
Boston City Hospital*[1]	Boston	D Munro	976		64	11		2	2	110
Lahey Clinic[1]	Boston	G Horrax	800	3 900	33	19	7	7	2	100
Massachusetts General Hospital*	Boston	J C White	939		33	20	1	3	3	41 66
New England Center Hospital*	Boston	W H Sweet	86		11	11		1	1	83 33
University Hospital*[1]	Ann Arbor Mich	E A Kahn	959	2 560	82	47	1	6	3	121
Grace Hospital*	Detroit	E S Gurdjian	759	198	45	27	1	1	3	225
Henry Ford Hospital*[1]	Detroit	A S Crawford	433	2 810	29	10	1	3	2	225
University of Minnesota Hospitals*[1]	Minneapolis	W T Peyton	383		21	12	1	3	3	
Mayo Foundation	Rochester Minn	W McK. Craig					7	19	3	135
Barnes Hospital*	St Louis	H. G Schwartz	549	505	52	36		3	3	
University of Nebraska Hospital	Omaha								3	
Albany Hospital*[1]	Albany N Y	E H Campbell	867	166	24	16	1	3	3	50
Jewish Hospital*[1]	Brooklyn	I Tarlov and J Sims	63	300	29	13		2	2	60
Kings County Hospital*[1]	Brooklyn	E J Browder	3 507	1 843	238	141	2	4	3	
Buffalo General Hospital*	Buffalo N Y	W B Hamby	355	54	27	18	3	3	3	25
Millard Fillmore Hospital*[1]	Buffalo N Y	F W Beswick	320	16	19	11	1	1	1	60
Bellevue Hospital Div II Cornell University*[1]	New York City	W Wingebach	126		26	19	1	2	2	80
Bellevue Hospital Div III New York University*[1]	New York City								1	
Beth Israel Hospital*[1]	New York City	L. M Davidoff	440	320	46	21	1	1	3	60
Mount Sinai Hospital*[1]	New York City	L M Davidoff	314		40	17	2	2	3	60
Presbyterian Hospital*[1] [20]	New York City	J L. Pool	622	1 615	41	63	2	7	3	[illegible]
St Vincent's Hospital*[1]	New York City	C G de Gutierrez Mahoney	513	2 918	49	34	1	3	2	60
Strong Memorial Rochester Municipal Hospitals*[1]	Rochester, N Y	W P Van Wagenen	412	217				1	3	66 66
Syracuse Memorial Hospital*[1]	Syracuse N Y	A D Ecker	218	101	24	18		1	1	125
Duke Hospital*[1]	Durham N C	B Woodhall	1 021	1 461	51	30	2	4	3	41 66
Christ Hospital*	Cincinnati	F H Mayfield	353	520	10	9		1	1	145
Cincinnati General Hospital*[1]	Cincinnati								3	
Good Samaritan Hospital*[1]	Cincinnati	F Mayfield	177		14			1	1	185
Cleveland Clinic Hospital[1]	Cleveland	W J Gardner	834	6 460	34	25	2	10	2	
White Cross Hospital*[1]	Columbus Ohio	H E LeFever	670		45	25	1	2	2	100
St Vincent's Hospital*[1]	Toledo	M T Schnitker	394		24	14	1	1	1	125
University Hospitals*	Oklahoma City	H Wilkins	908	982	25	9	1	1	2	50
University of Oregon Medical School Hospitals and Clinics*[1] [41]	Portland Ore	J Raaf	298		24	16	1	3	1	85
Graduate Hospital of the University of Pennsylvania*[1]	Philadelphia	R A Groff	380	659	38	10	1	2	2	
Hospital of the University of Pennsylvania*[1]	Philadelphia	F C Grant	528	670	34	34		3	3	
Jefferson Medical College Hospital*	Philadelphia	R Jaeger	378	1 225	49	32	3	3	2	
Temple University Hospital*[1]	Philadelphia	M Scott	646	247	49	18		2	2	
Mercy Hospital*[1]	Pittsburgh	F H Bragdon	351	167	19	4			2	100
Western Pennsylvania Hospital*[1] [42]	Pittsburgh	S N Rowe	320	47	31	12	1	2	2	100
Robert Packer Hospital*[1]	Sayre Pa	A B King	180	156	9	7	1	1	1	150
Baptist Memorial Hospital*	Memphis	R E Semmes	1 508	303	55	29		1	2	125
Vanderbilt University Hospital*[1]	Nashville								3	
University of Texas Medical Branch Hospitals*[1] John Sealy Hospital	Galveston Tex	S R Snodgrass	321	410	29	31	1	2	2	75
Methodist Hospital*[1]	Houston Tex	J Greenwood	383	11	12				2	75
University of Virginia Hospital	Charlottesville Va	W G Crutchfield	764	512	32	12	1	3	3	50
Medical College of Virginia—Hospital Division*[1]	Richmond, Va	C C Coleman	1 037	620	66	24			3	46 50
State of Wisconsin General Hospital*[1]	Madison Wis	T E. Erickson	280	814	25	23	1	4	3	75

Numerical and other references will be found on page 462

11 NEUROLOGY

The following services are approved by the Council and the American Board of Psychiatry and Neurology

Hospitals 77 Assistant Residencies and Residencies 223

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered*	Total Residencies Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY										
Letterman Army Hospital*	San Francisco Calif	E B Litteral	1 040	5 650					3	
Fitzsimons Army Hospital*	Denver Colo	D B Peterson	384	1 010	2	2	4	15	2	
Army Medical Center*[27]	Washington D C	J W Kemble	598	073	2	2			1	
UNITED STATES NAVY										
U S Naval Hospital*[1]	Bethesda Md	S M Smith	280	800	7	6		1	1	
U S Naval Hospital*[1]	Philadelphia Pa	E. L Caveny	361		29	9			1	
FEDERAL SECURITY AGENCY										
Freedmen s Hospital*[1]	Washington D C	E Y Williams	904	1 279	11	4		1	2	
VETERANS ADMINISTRATION										
Veterans Admin Hospital*	Long Beach, Calif	J D French	520	448	50	48	2	4	3	
Veterans Admin Hospital*[1]	Los Angeles	R H. Barris	201	186	17	14	2	2	3	
Veterans Admin Hospital	San Francisco	W J Friedlander	271	258	3	3	4	4	2	
Veterans Admin Hospital	Hines Ill	L J Pollock	1,258		88	46		18	3	
Veterans Admin Hospital[1]	Topeka Kans	L Bernstein	501		7	6	1	2	2	
Veterans Admin Hospital[1,45]	Louisville Ky	E Roseman	277	1 423	14	7	1	2	2	
Veterans Admin Hospital[1]	Framingham Mass	F A Quadfasel	629		8	6	2	4	3	
Veterans Admin Hospital[1]	Minneapolis Minn	R C Gray	822	850	44	32	3	4	3	
Veterans Admin Hospital	Brooklyn								3	
Veterans Admin Hospital[1]	New York City	H L Flowers	1 006	700	53	30	2	6	3	
Veterans Admin. Hospital[1,12]	Cleveland Ohio	L Halle							2	
Veterans Admin Hospital[1]	Coatesville Pa	C Rupp					6	6	3	
Veterans Admin Hospital*	Richmond Va	B Nagler	305		4	1	1	3	3	
NONFEDERAL										
Los Angeles County Hospital*[1]	Los Angeles	S D Ingham	3 157	3 490	750	233	3	3	3	165
White Memorial Hospital*	Los Angeles	C B Courville	200	2 692	6	5	1	2	3	120
University of California Hospital*[1]	San Francisco	R B Aird	283	3 378	4	3		3	2	75
Gallinger Municipal Hospital*[1]	Washington D C	W Freeman and F M Forster	542		54	17	1	3	2	100
Georgetown University Hospital*	Washington D C	F M Forster	619		56	23	2	2	2	50
George Washington University Hospital*	Washington D C	W Freeman	177	538	4	2	1	1	2	130
Cook County Hospital*[1]	Chicago	J A Luhan	342	2 791	56	19		2	1	37
Illinois Neuropsychiatric Institute	Chicago	E Oldberg					1	2	3	
St. Luke s Hospital*[1]	Chicago	A P Solomon	187	334	2		1	1	2	25
University of Chicago Clinics*	Chicago	R B Richter	168	2 305	5	5		2	2	25
Indianapolis General Hospital*[1]	Indianapolis	A. T Ross	148		45	17	1	1	1	80
Indiana University Medical Center and Affiliated Hospitals*[1]	Indianapolis	A. T Ross		763			1	1	1	150
Methodist Hospital*[1]	Indianapolis	C K Hepburn	812		55	31	1	1	1	260
University Hospitals*[1,44]	Iowa City	A. L Sahs	1 124	608	28	17	2	3	3	50
University of Kansas Medical Center*[1]	Kansas City Kans	A T Steegmann	183	775	15	11			2	100
Louisville General Hospital*[1]	Louisville Ky	E Roseman	775	1,549	85	55	1	3	1	45
Charity Hospital of Louisiana*[1]	New Orleans		408	9 748	11	2	2	6	3	25
Baltimore City Hospitals*[1]	Baltimore	J W Magladery	2 505		77	46		2	3	15
Johns Hopkins Hospital*	Baltimore	F Ford		2 443					2	41 66
Boston City Hospital*[1]	Boston	D E Denny Brown	175	4 334	22	17	3	5	3	90
Massachusetts General Hospital*[1]	Boston	C S Kubik	233	6 141	27	13	2	8	3	41 66
New England Center Hospital*[1]	Boston	R D Adams	1 958					2	1	83 33
University Hospital*[1]	Ann Arbor Mich	R De Jong	616	3 885	23	12	2	4	3	124
Henry Ford Hospital*[1,12]	Detroit	G O Grain					1	2	1	275
University of Minnesota Hospitals*[1]	Minneapolis	A. B Baker	706		53	40		5	3	
Mayo Foundation	Rochester Minn	H W Woltman					3	10	3	135
Barnes Hospital*[1]	St Louis	W B Wood and E F Gildea	423		8	6		1	2	
Homer G Phillips Hospital*[1]	St Louis	J O Leary	1 018	1 927	72	14		2	3	182 80
St. Louis City Hospital*[1]	St. Louis	J O Leary and E Sassin	707	1 494	222	70			2	123 80
Albany Hospital*[1]	Albany N Y	R W Graves	1,508	489	7	3	1	2	1	50
Jewish Sanitarium and Hospital for Chronic Diseases[1]	Brooklyn	A M Rabiner	485		50	17	3	6	2	175
Kings County Hospital*[1]	Brooklyn	O C Perkins	1 729	3 885	589	86	2	4	3	
Buffalo General Hospital*	Buffalo	J H Talbott	142	661	5	4	1	1	2	25
Bellevue Hospital Div II Cornell University*[1]	New York City	L Hausman	557	4 648	41	22	2	3	3	50
Bellevue Hospital Div III New York Univ *[1,7,12]	New York City						2	4	3	80
Beth Israel Hospital*[1]	New York City	S Brock	73	645	3	1	1	1	2	50
Fordham Hospital*[1]	New York City	J H Friedman	70	498	6	2	1	1	1	130
Goldwater Memorial Hospital*[1]	New York City	B Dattner and P Maybarduk	651	183	80	18	2	6	1	80
Lenox Hill Hospital*	New York City	T K Davis	372	1 635	18	8	1	1	2	50
Metropolitan Hospital*[1]	New York City	L Tarlov	84	1 472	8		1	1	2	130
Montefiore Hospital for Chronic Diseases*[1]	New York City	T J C Von Storch							3	60
Morrisania City Hospital*[1]	New York City	N Savitsky		1 187			1	2	2	80
Mount Sinai Hospital*[1]	New York City	I S Wechsler	841	2 730	41	21	4	4	3	50
New York City Hospital*[1]	New York City	K H Houck	697	1 197	145	30	1	2	2	80
Presbyterian Hospital*[1,20]	New York City	H H Merritt	2 853	12 156	84		10	15	7	208
St Vincent s Hospital*[1]	New York City	C G de Gutierrez Mahoney								
Duke Hospital*[1]	Durham N C	E Kunkle							1	
North Carolina Baptist Hospital*	Winston-Salem N C	R L Masland	183	720	10	6	1	1	3	
Cincinnati General Hospital*[1]	Cincinnati	C Aring	95	050	7	5	1	2	2	200
Cleveland Clinic Hospital[1]	Cleveland	L J Karnosh	354	2,252	103	50	1	2	3	
University of Oregon Medical School Hospital and Clinics*[1]	Portland Ore		164	11 912	4		2	3	2	
Graduate Hospital of the University of Pennsylvania*[1]	Philadelphia	J C Yaskin		1 715			1	1	1	85
Hospital of the University of Pennsylvania*[1]	Philadelphia	C D Cammon	556	1,843	4	2	2	2	2	
Jefferson Medical College Hospital*[1]	Philadelphia	B J Alpers	810	3,544	12	7		4	3	
Philadelphia General Hospital*[1]	Philadelphia	G Wilson	694	20 872	20	9	5	5	3	
St Francis Hospital*[1,12]	Pittsburgh		1 870		577	289	2	4	3	75
University of Texas Medical Branch Hospitals Galveston State Psychopathic Hospital[12]	Galveston Texas								2 1	
State of Wisconsin General Hospital*[1]	Madison, Wis	W J Bleckwenn	473	654	5	3	2	2	3	25

Numerical and other references will be found on page 462.

12 OBSTETRICS AND GYNECOLOGY

The following services are approved by the Council and the American Board of Obstetrics and Gynecology
Hospitals, 190 Assistant Residencies and Residencies, 1623

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated	Outpatient Visits	First Year Residences Offered	Total Residences Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY									
Letterman Army Hospital*	San Francisco Calif	E A Zimmermann	OBG	2 042	13 595			3	
Fitzsimons Army Hospital*	Denver Colo	E N Akers	OBG	3 057	19 401		8	3	
Army Medical Center*[27]	Washington D C	H L. Riva	OBG	2 467	35 030	3	8	3	
Brooke Army Medical Center*[28]	San Antonio, Texas	J W Simpson	OBG	4 111	34,686			3	
Gorgas Hospital*	Panama C Z	I J Strumpf	OBG	1 889	11 778	1	3	1	
Tripler Army Hospital*	Honolulu Hawaii	H Hirshland	OBG	2 496	19 508			2	
UNITED STATES NAVY									
U S Naval Hospital*	Oakland Calif	F T Knowles	OBG	3 125	27 112		5	2	
U S Naval Hospital*	San Diego Calif	P Peterson	OBG	3 779	33 316	2	2	3	
U S Naval Hospital*	Great Lakes Ill	H H Hill	OBG	1 828	13 412			2	
U S. Naval Hospital*	Bethesda Md	L M Harris	OBG	2,541	30 015	4	7	3	
U S Naval Hospital*	Chelsea Mass	F B Smith	OBG	1 412	11 861	2	4	2	
U S Naval Hospital*[1]	St Albans N Y	R E Crowder	OBG	1 595	13 181			2	
U S Naval Hospital*	Philadelphia	P B Gallegos	OBG	1 683	12 446			3	
U S Naval Hospital*	Portsmouth Va	L T Dorgan	OBG	4 011	44 050	4	6	3	
FEDERAL SECURITY AGENCY									
Freedmen's Hospital*[1]	Washington, D C	J W Ross	OBG	4 404	10 313	1	4	3	
NONFEDERAL									
Carraway Methodist Hospital*[1]	Birmingham Ala	T M Boulware	OB	1 444	9 347	1	1	1	150
Jefferson-Hillman Hospital*[1]	Birmingham Ala	W N Jones and J R Garber	OBG	5 846	18 585	2	6	3	50
Lloyd Noland Hospital*[1]	Fairfield Ala	O T West	OB	1 732	13 671	2	4	2	225
Good Samaritan Hospital*[1]	Phoenix Ariz	C B Warrenburg	OBG	3,292	200	1	1	1	150
Memorial Hospital*	Phoenix Ariz		OB					1	
St Vincent Infirmary*[1]	Little Rock Ark	B J Reaves	OBG	2 489	232	1	3	3	125
University Hospital*[1]	Little Rock Ark	W E Brown	OBG	2 760	16 160	3	9	3	75
San Joaquin General Hospital*[1]	French Camp Calif	D C Harrington	OBG	1 734	9 390	1	2	2	220
Seaside Memorial Hospital*	Long Beach Calif		OB GYN	2 129 1 174				1 1	
Los Angeles County Hospital*[1]	Los Angeles	B J Hanley	OBG	15 281	18 657	11	11	3	165
Presbyterian Hospital-Olmstead Memorial*[1]	Los Angeles	F F Bryant J C Irwin	OB GYN	2 215 842	2 233 210	2 2		1 1	100 100
Queen of Angels Hospital*[1]	Los Angeles	A. M McCarthy	OBG	9 955	3 175	2	4	3	100
White Memorial Hospital[1]*	*Los Angeles*	*R J Thompson*	*OBG*	*2 367*	*19 074*	*2*	*4*	*2*	*120*
Highland Alameda County Hospital*[1]	Oakland, Calif	T F Bell	OBG	3,879	6 783		3	3	145
Permanente Foundation Hospital*[1]	Oakland, Calif	R W King	OBG	3,387	26 777		6	3	175
Samuel Merritt Hospital	Oakland Calif	C C Hall	OBG	2 847		2	2	1	100
Collis P and Howard Huntington Memorial Hospital*[1]	Pasadena Calif	F I Sorenson	OBG	2 053	343	1	1	1	150
Mercy Hospital*[1]	San Diego Calif	D D Deeds	OBG	6,238	1,898	2	4	2	100
San Diego County General Hospital*[1]	San Diego Calif	W B McGee	OBG	1 328	5 672	1	2	2	125
Children's Hospital*[1]	San Francisco	H A Stephenson	OBG	3 501	4 022	1	4	3	50
Mary's Help Hospital*[1]	San Francisco	C L Cooley	OBG	2 636	5 065	1	2	1	150
St Francis Hospital [1]	San Francisco	C D Hart	OB	1 537	39	2	4	1	265
St. Joseph's Hospital*[1]	San Francisco	H Von Geldern	OBG	2 073	1 467	2	4	1	100
St. Mary's Hospital*[1]	San Francisco	P H Arnot	OB	2 038	1 431	2	2	1	100
San Francisco Hospital*[1]	San Francisco	E B King and D A Dallas	OBG			1	4	3	175
Stanford University Hospitals[1]*	San Francisco	C E McLennan	OBG	3 163	14 499	2	6	3	60
University of California Hospital*[1]	San Francisco	H F Traut	OBG	2,308	16 061		5	3	75
Santa Clara County Hospital*[1]	San Jose Calif	J Muir	OBG	1 602	7 995	1	3	2	235
St John's Hospital*	Santa Monica Calif	R H Watson	OBG	3,221	2 119	1	1	2	100
Harbor General Hospital*[1]	Torrance Calif	L R Hill	OBG	2 153	2 755	2	4	3	165
St. Joseph's Hospital*[1]	Denver	L W Mason	OBG	3 552			2	2	100
University of Colorado Medical Center									
Colorado General Hospital*[1]	Denver	E S Taylor	OBG	1,597	9,351	2	5	3	75
Denver General Hospital*[1,24]	Denver	E S Taylor	OBG	1,578	6,216		2	3	75
Bridgeport Hospital*[1]	Bridgeport, Conn	C Griswold	OB	1 959	1 149	2	2	1	100
St. Vincent's Hospital*	Bridgeport, Conn	J H Howard	OB	2 646	1 018	2	4	1	150
Hartford Hospital*[1]	Hartford Conn	L P Middlebrook	OBG	8,590	7 097	1	3	3	60
St. Francis Hospital*	Hartford Conn	W Daly and G Cogan	OBG	3 714	3 152	4	8	2	75
New Britain General Hospital*[1]	New Britain Conn	D A Bristoll	OBG	1 754		1	1	1	115
Grace New Haven Community Hospital									
Grace Unit*	New Haven Conn	L K Musselman	OBG	2 062		1	3	3	40
New Haven Unit (University Service)[1]*	New Haven Conn	H Thoms	OBG	3,379	10 698	3	6	3	40
Hospital of St Raphael*[1]	New Haven Conn	C E Johnson	OBG	1 598	1 634	2	6	3	75
Lawrence and Memorial Associated Hospitals*[1]	New London Conn	E H Blank	OBG	2,267		2	2	1	125
Norwalk Hospital*[1]	Norwalk Conn	G V Gorham	OB	1 685	518	1	1	1	155
Columbia Hospital for Women and Lying In Asylum [1]	Washington D C	P Haynes and H J R McNitt	OBG	6 208	13 454		8	3	90
Doctors Hospital*[1]	Washington D C	J D Wynkoop	*OBG*	3,290		1	2	2	100
Gallinger Municipal Hospital*[1]	Washington D C	C H Nash	OBG	7,228	8 531	4	7	3	100
Garfield Memorial Hospital*[1]	Washington D C	R O Donnell and R J Jansen	OBG	4 092	4 988	2	6	3	75
Georgetown University Hospital*[1]	Washington, D C	A A Marchetti	OBG	3 146	5,243	3	7	3	25
George Washington University Hospital[1,46]*	Washington D C	*J L Parks*	*OBG*	*5 135*	*1 097*	1	4	3	150
Providence Hospital*[1]	Washington D C	G J Ellis	OBG	3 792	2,917	1	8	2	75
Sibley Memorial Hospital*[1]	Washington D C	J Kotz	OBG	4 496	1 058	2	6	2	100
Brewster Hospital*[1]	Jacksonville Fla	M Suter	OBG	1 855	1 967	2	2	1	125
Duval Medical Center*	Jacksonville Fla	E F McCall F Richards	OB GYN	1,597 589	6 982 3,359	1 1	1 1	1 1	125 125
St Luke's Hospital*	Jacksonville Fla	J C Taylor	OB	1 956	2,240	1	2	1	140
St Vincent's Hospital*[1]	Jacksonville, Fla	E F McCall and T S Field	OBG	4,331	124	2	3	1	125
Jackson Memorial Hospital*[1]	Miami Fla	J D Milton	OBG	4 675	5 175	2	4	2	60
Orange Memorial Hospital*[1]	Orlando Fla	D Brame and H A Day	OBG	2 836		2	2	1	210
Crawford W Long Memorial Hospital*[1]	Atlanta Ga	R K Hancock	OBG	8,293	11 148	6	12	3	75
Grady Memorial Hospital*[1]	Atlanta Ga	J B Cross	OBG	7,560	53 300	8	14	3	20
Piedmont Hospital*[1]	Atlanta Ga	C B Upshaw	OBG	1 869		1	2	1	90
St. Joseph's Infirmary	Atlanta Ga	M T Benson Jr	OBG	1,398	2 636	1	3	2	170
University Hospital*[1]	Augusta, Ga	R. Torpin	OBG	4 531	8 854	4	10	3	40
Augustana Hospital[1]*	Chicago	W H Browne	OB	2 023	2,368	2	2	1	75
Chicago Maternity Center [1]	Chicago	B E Tucker and H. B Benaron	OB	5,239	11,366	3	8	1	150

Numerical and other references will be found on page ***462***

12 OBSTETRICS AND GYNECOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated	Outpatient Visits	First Year Residencies Offered	Total Residences Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
Cook County Hospital*[1]	Chicago	F H Falls and J E Fitzgerald	OBG	5 614	17 720		16	3	32
Englewood Hospital*	Chicago	C D Krause	OB	1 073		1	1	1	150
Frank Cuneo Hospital[1]	Chicago	H O Maryan	OBG	2 620	75	1	1	1	150
Grant Hospital*[1]	Chicago	V C Freida	OBG	2 469	2,216	2	6	3	150
Henrotin Hospital*[1]	Chicago	J R. Wolff	OB	861	556	1	1	1	100
Hospital of St. Anthony de Padua*[1]	Chicago	F J Farn	OB	1 687		1	1	1	150
Illinois Masonic Hospital*[1]	Chicago	F J Roos	OBG	2,235	841	4	6	1	50
Lewis Memorial Maternity Hospital[1, 47]	Chicago	H E Schmitz	OBG	2 438	11 644	4	12	3	50
Loretto Hospital*[1]	Chicago	C Wickster	OB	1,223		1	1	1	150
Lutheran Deaconess Home and Hospital*	Chicago	C Rosene	OB	1,348		1	1	1	100
Mercy Hospital*[1]	Chicago	H E Schmitz	OBG	1 574	4 237	2	6	3	25
Michael Reese Hospital*[1]	Chicago	A Koff	OBC	4 601	7 474	2	6	3	25
Mount Sinai Hospital*[1]	Chicago	A H Klawans	OBG	1 984	2 015	1	2	2	50
Passavant Memorial Hospital*[1]	Chicago	J I Brewer	OBG	3 860	741	2	3	3	
Presbyterian Hospital*[1]	Chicago	E D Allen	OBG	3 455	2 264	4	7	3	25
Provident Hospital*[1]	Chicago	P M Santos	OBG	2 742		2	4	3	50
Ravenswood Hospital*[1]	Chicago	F W Rohr	OBG	2'561	1,210	2	5	2	75
Research and Educational Hospitals*[1, 48]	Chicago	F H Falls	OB	1 501	14 979	1	4	3	55
St. Anne s Hospital*[1]	Chicago	R. J Hawkins	OB	4 791	3 120	8	8	3	50
St Elizabeth Hospital*	Chicago	J R Lavieri	OBC	3 772	381	2	2	1	100
St. Joseph Hospital*[1]	Chicago	C Geiger	OBG	2 221	3 277	3	5	2	125
St Luke s Hospital*[1]	Chicago	E A. Edwards	OBG	2 451	10,546	1	5	3	25
Swedish Covenant Hospital*[1]	Chicago	G L Rosene	OB	1 778		1	1	1	150
University of Chicago Clinics*[1] Billings Hospital Chicago Lying In Hospital and Dispensary	Chicago	W J Dieckmann	OBC	5 927	36 494	14	23	3	25
Wesley Memorial Hospital*[1]	Chicago	G Gardner	OBG	3 112		1	5	3	25
Women and Children's Hospital*[1]	Chicago	A Phillips	OB	1 127	1 099	2	2	2	75
Evanston Hospital*[1]	Evanston Ill	D N Danforth	OBG	2 626	1 672	1	3	3	50
St Francis Hospital*[1]	Evanston Ill	J X Bremner	OBG	4 108	141	1	3	3	150
Little Company of Mary Hospital*	Evergreen Park Ill	P E Lawler	OB	3 566		3	6	2	100
		W T Carlisle	CYN	848		2	2	1	100
West Suburban Hospital*	Oak Park Ill	F H Falls	OBG	5 104	378	1	3	2	150
Methodist Hospital of Central Illinois*[1]	Peoria Ill	W Cooley	OB	2,212		2	2	1	200
St. Francis Hospital	Peoria Ill	C J Heiberger	OBG	4 248	1 193	1	2	2	100
Indianapolis General Hospital*[1]	Indianapolis	J W Hofmann and C O McCormick, Sr	OBG	2 635	12 637	1	3	3	80
Indiana University Medical Center*[1]	Indianapolis	C Huber	OB	2 279	5 563	1	3	3	150
Methodist Hospital*	Indianapolis	D Talbott	OB	6 293		3	6	2	260
St. Vincent s Hospital*[1]	Indianapolis	J H Hawk and C Habich	OBG	3 185	636	1	3	3	200
St. Elizabeth Hospital*[1]	La Fayette Ind	F W Peyton	OBG	2 445	103		3	2	150
University Hospitals*[1]	Iowa City	J Randall	OBC	2 419	3 415	3	9	3	50
University of Kansas Medical Center*[1]	Kansas City Kans	L A. Calkins	OBG	2 900	13 084	2	6	3	100
St Francis Hospital*[1]	Wichita Kans	R A. West	OBG	4 111		2	6	1	
Wesley Hospital*[1]	Wichita Kans	G Cowles	OBG	4 528		3	3	1	
St Joseph Hospital*[1]	Lexington Ky	A B Barrett	OBG	2 061		1	1	1	140
Louisville General Hospital*[1]	Louisville Ky	W O Johnson	OBG	3 123	18 132	3	9	3	45
St Joseph Infirmary*	Louisville Ky	G Bryant	OBG	3 488	882	2	4	2	150
Charity Hospital of Louisiana*[1]	New Orleans		OBG	1 724	88 677	8	26	3	25
Hotel Dieu—Sisters Hospital*[1]	New Orleans	E W Nelson	OBG	4,291	1 233		2	1	100
Ochsner Foundation Hospital*[1]	New Orleans	C Tyrone	OBG	388	14 143	2	6	3	125
Southern Baptist Hospital*[1]	New Orleans	J W Reddoch	OBG	6 198		1	3	1	125
Touro Infirmary*[1]	New Orleans	C Tyrone and A Caire Jr	OBG	4 115	7 335	2	6	3	17
Shreveport Charity Hospital*[1]	Shreveport La	C R. Mays	OBG	5 143	2 118	2	6	2	60
Baltimore City Hospitals*[1]	Baltimore	L H Douglass	OB	3 157	654	2	7	3	15
Bon Secours Hospital*	Baltimore	E Novak and H B McNally	OBG	2,387	2 780	1	3	3	130
Franklin Square Hospital*[1]	Baltimore	K W Mansfield	OBG	1 621	1 603	1	3	2	125
Hospital for Women*[1]	Baltimore	J E Savage	OBG	2 212	5 409	1	4	3	50
Johns Hopkins Hospital*[1]	Baltimore	R W Telinde and N J Eastman	OBG	5 799	31 648	0	23	3	41 60
Lutheran Hospital*[1]	Baltimore	W N Long Jr and W K Diehl	OBG	2 907	3 440	2	6	3	85
Maryland General Hospital*[1]	Baltimore	E H Kloman and D McDixon	OBG	1 965	936	3	4	2	50
Mercy Hospital*[1]	Baltimore	T K Galvin and J J Erwin	OBG	2 848	5 081	3	4	3	75
Provident Hospital and Free Dispensary*[1]	Baltimore	L H Douglass	OB	1 490	3 550	2	2	1	100
St Agnes Hospital*	Baltimore	E Novak and H B McNally	OBG	2 004	868	2	4	2	75
St. Joseph s Hospital*[1]	Baltimore	T K Galvin and H B McNally	OBG	2,300	3 574	1	4	3	115
Sinai Hospital*[1]	Baltimore	D Silberman and A F Guttmacher	OBG	4 067		2	9	3	35
South Baltimore General Hospital*[1]	Baltimore	J K B E Seegar	OB	954	2 747	2	3	2	125
Union Memorial Hospital*[1]	Baltimore	J M Hawa	OB	3 172	4,291	2	5	2	40
University Hospital*[1]	Baltimore	L H Douglass and J M Hundley Jr	OBG	4 014	27 521	7	13	3	
Beth Israel Hospital*[1]	Boston	H. H Rosenfield	OBG	941	889	2	3	2	41 66
Boston City Hospital*[1]	Boston	F L Good and R D Margeson	OBG	5 939	18 718	3	8	3	90
Boston Lying In Hospital[1]	Boston	D E Reid	OB	7 007	25 184	6	10	3	62
Carney Hospital*	Boston	L. E Phaneuf	OBC	1 745	3,357	1	3	3	75
Massachusetts Memorial Hospitals*	Boston	B Tenney Jr	OBG	1 607	4 775	1	3	3	50
St Elizabeth s Hospital*[1]	Boston	W J McDonald	OB	2 234	1 857	1	2	1	125
Booth Memorial Hospital[1]	Brookline Mass	H S Finkel	OB	1 147	3 160	2	2	1	
Free Hospital for Women	Brookline Mass	G Van S Smith	CYN	3 129	13 942	4	4	3	40
Cambridge City Hospital*[1]	Cambridge Mass	F J Lynch	OBG	1 998	3 785	1	3	3	125
Quincy City Hospital*	Quincy Mass	G D Dalton	OBG	2 752	959	2	2	1	150
St Joseph s Mercy Hospital*[1]	Ann Arbor Mich	H H Cummings	OBG	2 075		2	4	2	125
University Hospital*[1]	Ann Arbor Mich	N F Miller	OBG	286	15 130	3	14	3	124
City of Detroit Receiving Hospital*[1]	Detroit	C S Stevenson	GYN	1 100	7 371	1	4	3	217
Evangelical Deaconess Hospital*[1]	Detroit	L. Braun	OBG	1 700		1	1	1	200
Florence Crittenton Hospital	Detroit	H A Pearse	OBG	3 820	3 181	2	6	3	150
Grace Hospital*[1]	Detroit	O W Pickard	OBG	9 661	2 642	2	2	3	225
Harper Hospital*[1]	Detroit	A. E. Catherwood	OBG	5,357	3 951	2	6	3	205
Henry Ford Hospital*[1]	Detroit	J P Pratt	OBG	3 603	36,326	2	5	3	225
Herman Kiefer Hospital[1]	Detroit	C S Stevenson	OB	3 991	18,502	2	6	2	217

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12 OBSTETRICS AND GYNECOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated	Outpatient Visits	First Year Residencies Offered*	Total Residencies Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
Mt Carmel Mercy Hospital★[1]	Detroit	C N Swanson	OBC	7,574		4	8	[illegible]	125
Providence Hospital★[1]	Detroit	H Henderson	OBG	5 375		1	3	2	200
St. Joseph s Mercy Hospital★[1]	Detroit	R. B Kennedy	OBG	3 004	904	2	6	2	150
Woman's Hospital★[1]	Detroit	R B Kennedy and H M Nelson	OBC	6,518	2 198	3	7	3	150
Hurley Hospital★	*Flint Mich*	I H Gutow	OBG	4 265			2	[illegible]	181
Blodgett Memorial Hospital★[1]	Grand Rapids Mich	D Schuitema	OBG	2 000	847	1	1	1	900
Butterworth Hospital★[1]	Grand Rapids Mich	L C Bosch	OBG	4 177	2 138	1	3	3	123
St. Mary s Hospital★[1]	Grand Rapids Mich	J H Beaton	OBG	3 986	107	3	3	1	125
Pontiac General Hospital★	Pontiac Mich	F Gaenspauer	OBG	3 706	44	2	4	3	100
St. Joseph Mercy Hospital★[1]	Pontiac Mich	F Gaensbauer	OB					1	
Saginaw General Hospital★[1]	Saginaw Mich	C F Toelach	OBG	2 683	1 073	1	3	3	300
Maternity Hospital[1]	Minneapolis	A. Arnold	OB	3 935	6 015	[illegible]	2	1	200
Minneapolis General Hospital★[1]	Minneapolis	L A Lang	OBG	1,228	5 744	1	2	3	125
Northwestern Hospital★[1]	Minneapolis	W Sadler	OBG	2,355		2	2	2	175
St. Barnabas Hospital★[1]	Minneapolis	O F Robbins	OBC	3 152		1	2	2	125
St. Mary s Hospital★[1]	Minneapolis	L A. Lang	OBG	4 741			3	2	200
University of Minnesota Hospitals★[1]	Minneapolis	J McKelvey	OBG	1 194		2	8	[illegible]	
Mayo Foundation	Rochester Minn	L M Randall	OBG			6	16	3	135
Ancker Hospital★[1]	St Paul Minn	E Kasper	OBG	913	3 826		1	3	91
Charles T Miller Hospital★[1]	St Paul Minn	E Hartley and R S Countryman	OBG	2 990	8 422		2	3	115
St. Louis County Hospital★[1]	Clayton, Mo	E L Dorsett	OBG	1 013	7 660	1	2	3	93
Kansas City General Hospital No 1★[1]	Kansas City Mo	J G Webster	OBG	1 870	8 589	1	3	3	75
Kansas City General Hospital No 2★[1]	Kansas City Mo	H L Gainey	OBG	1,293	3 957	3	6	2	
St. Joseph Hospital★	Kansas City Mo	A B Sinclair	OBG	3 734	2,387			2	150
St Luke s Hospital★[1]	Kansas City Mo	P A Gempel	OBG	3 023		1	2	2	150
De Paul Hospital★	St Louis	R A Boedeker	OBG	3 167	439	1	2	2	150
Homer G Phillips Hospital★[1]	St Louis	K C Morrin	OBG	4 758	9 853	3	11	3	122 80
Jewish Hospital★[1]	St. Louis	S D Soule and M H Meyerhardt	OBG	2,530	1 618		2	[illegible]	100
St John s Hospital★	St Louis	M W Weis	OB	3 159	2 272	1	1	1	75
St. Louis City Hospital★[1]	St Louis	L J Hartnett	OBC	2 458	7 108	2	7	3	123
St. Louis Maternity Hospital[1]	St. Louis	W Allan	OBG	6 691	19,598	5	23	3	25
St Mary s Group of Hospitals★[1]	St. Louis	J A Hardy Jr	OBC	6,547	11 861	5	11	3	35
Lincoln General Hospital★[1]	Lincoln Nebr	H S Morgan	OBG	1,551		1	1	1	125
St. Elizabeth s Hospital★[1]	Lincoln Nebr	S T Thierstein	OB	1 736		1	1	1	200
Creighton Memorial-St Joseph s Hospital	Omaha	M E Crier	OBC	3 778	5 096	2	6	3	100
University of Nebraska Hospital★[1,38]	Omaha	L. D Odell	OBG	1 067	4 083	1	3	2	125
Cooper Hospital★[1]	Camden N.J	G B German and H P Shipps	OBG	4 720	13 088	2	6	3	83 33
Jersey City Hospital★[1]	Jersey City N.J	E W Bookmajun	GYN	766	6,253	1	3	3	35
Margaret Hague Maternity Hospital[1]	Jersey City N.J	S A Cosgrove	OB	10,216	21 574	8	16	3	6[illegible]
Monmouth Memorial Hospital★[1]	Long Branch N.J	R A Mackenzie	OB	1 987	863	2	2	2	200
Newark Beth Israel Hospital★	Newark N.J	W Brams	GYN	1 695	989	1	1	1	100
Paterson General Hospital★[1]	Paterson, N.J	L E Thron	OB	2 760	1 381	1	1	1	100
Albany Hospital★[1]	Albany N Y	A J Wallingford and T O Gamble	OBG	4 411	2 854	2	5	2	50
Anthony N Brady Maternity Home[1]	Albany N Y	J O C Kiernand	OB	2 920	2 522	1	2	2	100
Beth El Hospital★[1]	Brooklyn	J Halperin	OBG	4 473	4 679	2	4	2	100
Brooklyn Hospital★[1]	Brooklyn	J T Wallace	OBG	2 708	5 947	1	3	3	25
Brooklyn Women s Hospital[1]	Brooklyn	A Koplowitz	OBG	1 890	3 067	2	2	1	100
Cumberland Hospital★	Brooklyn	S Lubin	OBC	2 451	11 750	3	5	3	80
Greenpoint Hospital★	*Brooklyn*	*W C Meagher*	*OBG*	*2 211*	*13 767*	*2*	*4*	*2*	*140*
Jewish Hospital★[1]	Brooklyn	M Shir and S A. Wolfe	OBG	7 138	8 743	8	18	3	50
Kings County Hospital★[1]	Brooklyn	R Garlick and L M Hellman	OBG	8,258	28 101	2	4	3	
Long Island College Hospital★[1]	Brooklyn	F P Light	OBC	3 123	5 448	1	8	3	25
Maimonides Hospital★[1]	Brooklyn	B Rabbiner	OBG	4 011	5 520	4	5	3	75
Methodist Hospital★	Brooklyn	H C Acken Jr and S C Hall	OBG	2 739	10 666	2	8	3	25
Norwegian Lutheran Deaconesses Home and Hospital★[1]	Brooklyn	B A Harris	OB	1 905	3 700	1	3	1	75
St Catherine s Hospital★[1]	Brooklyn	C A Gordon and W C Meagher	OBG	2 310	3,211	1	4	2	75
St. John s Episcopal Hospital★[1]	Brooklyn	C W Mueller	OPC	1 509	3,578	1	4	3	95
St. Mary s Hospital★[1]	Brooklyn	C H Loughran	OBC	2 700	6 425	1	3	3	80
Unity Hospital★[1]	Brooklyn	S L Siegler	OBG	2 903	1 245	2	4	2	100
Wyckoff Heights Hospital★[1]	Brooklyn	F W Benschino	OBC	1 498	915	1	3	1	
Buffalo General Hospital★[1]	Buffalo	C L Randall	OBG	2,513	5 191	10	10	3	25
Children s Hospital[1]	*Buffalo*	*R C McDowell*	*OB*	2,575				2	25
Deaconess Hospital★[1]	Buffalo	W H Burwig	OBG	3 353	187	1	3	1	125
Edward J Meyer Memorial Hospital★[1]	Buffalo	F G Winkler	OBG	1 780	8 411	2	4	3	100
Millard Fillmore Hospital★[1]	Buffalo	L F McLean	OBG	8 690	75	2	6	3	50
Sisters of Charity Hospital★[1]	Buffalo	E G Winkler	OB	3 809	103	3	9	3	150
Flushing Hospital and Dispensary★[1]	Flushing N Y	F Carpenter	OBG	4 854	3 968	1	2	3	100
Meadowbrook Hospital★[1]	Hempstead N Y	E F Miller	OB	984	3 003	1	2	1	135
Mary Immaculate Hospital★[1]	Jamaica N Y	J V Rizzi	OB	2 367	3 678	1	1	1	110
Queens General Hospital★[1]	Jamaica N Y	F Carpenter	OBG	3 073	10 404	1	2	2	80
Charles S Wilson Memorial Hospital★[1]	Johnson City N Y	G Cheatham	OB	1 730		2	2	1	150
Nassau Hospital★[1]	Mineola N Y	G Borden	OB	2 371		1	1	1	110
Bellevue Hospital Div III New York University★[1]	New York City	W F Studdiford	OBG	5 253	28,510	2	6	3	80
Beth Israel Hospital★[1]	New York City	H C Falk	OBG	3 947	7 079	[illegible]	6	2	50
Bronx Hospital★[1]	New York City	A C Posner A. J Fleischer	OB GYN	2 863 1 203	4 701 2 126	1 1	2 3	1 1	35 35
Flower and Fifth Avenue Hospital★[1]	New York City	L S Loizeaux	OBG	3,531	2 428	1	3	3	
Fordham Hospital★	*New York City*	M L Brandt	OBG	1 746	7 930	2	4	2	80
French Hospital★[1]	New York City	C Heaton and H C Falk	OBG	2 240	5 151	2	4	[illegible]	20
Harlem Hospital★[1]	New York City	P M Murray and A C Posner	OBG	7 754	45 695	6	10	3	80
Hospital for Joint Diseases★[1]	New York City	H B Davidson	GYN	368	2 722	1	1	1	40
Jewish Memorial Hospital★	New York City	M Brandt and S Rosenfeld	OBG	2,215	1 891	1	1	1	100
Lenox Hill Hospital★	New York City	R C Van Etten and J C Kilroe	OBG	3 406	8 089	1	2	2	50
Lincoln Hospital★[1]	New York City	W H Codsick	OBG	3 816	22 217	3	9	2	
Metropolitan Hospital★[1]	New York City	L Loizeaux, Jr	OBG	3 625	17 184	1	4	2	80
Misericordia Hospital★	New York City	J A Kelly	OB	1,879	3,259	1	1	1	100
Morrisania City Hospital★[1]	New York City	M J Goodfriend	OBG	1 934	8 963	1	4	2	40
Mount Sinai Hospital★[1]	New York City	M A. Goldberger	GYN	1 453	6 971	5	5	2	50

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Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated	Outpatient Visits	First Year Residencies Offered	Total Residencies Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
New York City Hospital*[1]	New York City	R J Lowrie and J V Ricci	OBG	2 735	15 073	2	5	2	80
New York Hospital*[1]	New York City	R G Douglas	OBG	7 110	40 918	10	14	3	25
New York Infirmary*[1]	New York City	W A. Ragland	OB	1 482	4 109	1	1	2	75
New York Polyclinic Medical School and Hospital*	New York City	E H Dennen	OB	1,379	2 987	1	2	2	75
		D N Barrows	GYN	1,237	2 710	1	2	2	75
Presbyterian Hospital*[1] [49]	New York City	H. C Taylor Jr	OBG	6,530	39 758	7	21	3	208
Roosevelt Hospital*[1]	New York City	T C Peightal	GYN	829		1	1	2	
St. Clare's Hospital*	New York City	M. J Jordan	OBG	2 990	4 685	1	4	3	25
St. Francis Hospital*	New York City	J S Labate	OBG					2	
St Vincent's Hospital*[1]	New York City	T E Lavell	OBG	4 062	8,222	1	4	3	50
Sydenham Hospital*[1]	New York City	P M. Murray	OBG	2 361	3 670	1	3	2	85
University Hospital*[1]	New York City	L. L MacKenzie	GYN	380	8 723		3	2	80
Woman's Hospital[1]	New York City	A. H Aldridge	OBG	5 929	29 488	4	10	3	25
United Hospital*[1]	Port Chester N Y	J Hawthorne	OB	1,228	603	1	2	1	150
Genesee Hospital*[1]	Rochester N Y	S R Snow	OBG	2,820	2 105	1	2	3	41 60
Highland Hospital*[1]	Rochester N Y	J B Loder	OB	2 090	490	1	1	1	100
Rochester General Hospital*[1]	Rochester N Y	E R Duggan	OB	2 413	2 039	1	1	3	55
Strong Memorial Rochester Municipal Hospitals*[1]	Rochester N Y	K M Wilson	OBG	3 385	6 996	3	9	3	41 66
Ellis Hospital*[1]	Schenectady N Y	W Mallia	OB	1 689		1	1	1	100
			GYN					1	100
General Hospital*	Syracuse N Y	R Pieri	OBG	2 478	2 061		3	2	
St. Joseph's Hospital*[1]	Syracuse N Y	L. G Fournier	OBG	2 669	1,506	2	2	1	125
Syracuse Memorial Hospital*[1]	Syracuse N Y	E. C Hughes and C E Clark	OBG	3 855	5 083		8	3	125
Charlotte Memorial Hospital*	Charlotte N C	W Z Bradford	OBG	2 471	2 014	1	2	2	100
Duke Hospital*[1]	Durham, N C	B Carter	OBG	3 102	16 209	3	10	3	25
Watts Hospital*[1]	Durham N C	E B Easley	OB	1 491	918		2	1	50
North Carolina Baptist Hospital*[1]	Winston-Salem N C	F R Lock	OBG	2 170	4,335	2	5	3	41 66
City Hospital*[1]	Akron Ohio	S B Conger	OBG	5 751	4 132	3	6	3	140
Peoples Hospital*	Akron Ohio	L. Da Sef	OBG	4 181	1,550	2	5	2	125
St. Thomas Hospital*[1]	Akron Ohio	L L. Moldavsky	OBG	2 956	2 089	2	8	2	200
Aultman Hospital*[1]	Canton Ohio	H. L Keck	OBG	3 860	94	4	5	1	125
Mercy Hospital*[1]	Canton Ohio	R K Ramsayer	OBG	3 810	280	2	5	2	125
Bethesda Hospital*[1]	Cincinnati	R D Bryant and L. J Bossert	OBG	4 123	371	2	4	3	150
Cincinnati General Hospital*[1]	Cincinnati	S Garber	OB	3 794	6,599	3	4	3	
City Hospital*[1]	Cleveland	A. E Bennett	OB	1 899	6 100	2	7	3	67
			GYN	582	5 438			1	
Fairview Park Hospital*[1]	Cleveland	E D Saunders	OB	2 785	330	1	2	1	100
Lutheran Hospital*[1]	Cleveland	R S Dial	OB	1 712		2	2	1	100
Mount Sinai Hospital*[1]	Cleveland	L H Biskind	OBG	3 750	5 677	2	3	3	100
St. Ann's Maternity Hospital	Cleveland	M B Lavin and H C Wise	OB	2 063	847	3	3	1	300
St John's Hospital*[1]	Cleveland	J V Heimann and R S Dial	OBG	3 133	350	2	4	2	110
St. Luke's Hospital*[1]	Cleveland	C T Hemmings	OBG	4 390	4 138	1	4	3	100
University Hospitals*[1]	Cleveland	G J Vosburgh	OBG	6 842	26 887	7	14	3	
Mount Carmel Hospital*[1]	Columbus Ohio	R. Daly	OB	3 089	880	1	3	2	135
Ohio State University Hospital*[1]	Columbus Ohio	A. C Barnes	OBG	3 728	14 944	2	6	3	50
St Ann's Maternity Hospital	Columbus Ohio	J J De Marco	OB	2 321	608	2	4	2	100
White Cross Hospital*[1]	Columbus Ohio	W M Silbernagel	OB	3 601		1	2	2	100
Miami Valley Hospital*[1]	Dayton Ohio	A. D Cook	OB	4 751	1 936	1	1	1	75
Lakewood Hospital*[1]	Lakewood Ohio	B Wylie	OB	1,517	34	2	2	1	100
St. Rita's Hospital*[1]	Lima Ohio	V A Noble	OB	2 034	203	1	2	2	100
Maumee Valley Hospital*	Toledo Ohio	B Botsch	OB	723	523	1	2	1	125
Mercy Hospital*[1]	Toledo Ohio	R C King	OBG	4 015	1 600	2	6	2	137 50
St. Vincent's Hospital*[1]	Toledo Ohio	M W Diethelm	OBG	2 887		2	4	3	125
Toledo Hospital*[1]	Toledo Ohio	O E Todd	OBG	3 782	1 489	2	4	3	125
St. Elizabeth's Hospital*[1]	Youngstown Ohio	P L Boyle	OBG	4 451	1 315	1	3	2	110
St Anthony Hospital*	Oklahoma City	G Rogers	OBG	5,255	2 908	1	2	2	150
University Hospitals*[1]	Oklahoma City	J W Kelso and J B Eskridge	OBG	2 133	10 907	3	3	3	50
Wesley Hospital*[1]	Oklahoma City	J W Records	OBG	2 989	3 256	1	1	1	150
St. John's Hospital*[1]	Tulsa Okla	F D Sinclair	OB	3,503		3	3	1	150
Emanuel Hospital*[1]	Portland Ore	R C Blatchford	OBG	6,531		1	3	3	85
St. Vincent's Hospital*[1]	Portland Ore	E. E Gambee	OB	2,205		1	1	1	75
University of Oregon Medical School Hospitals and Clinics*	Portland Ore	H C Stearns	OBG	1 635	9 647	1	3	3	85
Abington Memorial Hospital*[1]	Abington Pa	R D Porter and C M. Turman	OBG	2,348	3,292	1	1	2	50
St. Luke's Hospital*[1]	Bethlehem Pa	T E. Schadt	OBG	2 602	530	1	3	2	100
Bryn Mawr Hospital*[1]	Bryn Mawr Pa	J L. Richards	OBG	2,562	1 435	1	1	1	75
George F Geisinger Memorial Hospital and Clinic*[1]	Danville Pa	R. E Nicodemus	OB	1 457	9 959	2	2	1	100
Fitzgerald Mercy Hospital*	Darby Pa	J V Missett Jr	OBG	3 412	2 433			1	200
Harrisburg Hospital*[1]	Harrisburg Pa	W P Dailey	OB	2,325	2,541	1	3	1	
Episcopal Hospital*[1]	Philadelphia	J H. Dugger	OBG	2,556	4 919	2	3	3	50
Frankford Hospital*[1]	Philadelphia	G C Hanna Jr	OBG	2,584		1	1	1	200
Germantown Dispensary and Hospital*[1]	Philadelphia	Z B Newton	OBG	2,329	3 787	2	4	2	50
Graduate Hospital of the University of Pennsylvania*[1]	Philadelphia	R Kimbrough	GYN	646	1 770	1	2	3	
Hahnemann Hospital*[1]	Philadelphia	B V MacFadyen and N F Paxson	OBG	4 502	11,246	2	8	3	50
Hospital of the University of Pennsylvania*[1]	Philadelphia	F L. Payne and C Bachman	OBG	3 865	11 167	3	7	3	
Hospital of the Woman's Medical College of Pennsylvania*[1]	Philadelphia	M DeW Pettit and A. G Taylor	OBG	2,206	1 360	2	5	3	60
Jefferson Medical College Hospital*	Philadelphia	L. C Scheffey and T L. Montgomery	OBG	5 422	22 747	8	8	3	
Jewish Hospital*[1]	Philadelphia	C J Stamm and I Frank	GYN	1,875	601	1	2	2	50
Lankenau Hospital*[1]	Philadelphia	R B Wilson	OB	738		1	1	2	50
Mercy Douglass Hospital*[1]	Philadelphia		OBG					2	
Mount Sinai Hospital*[1]	Philadelphia	A. First and C Wachs	OBG	2 137	3 448	2	2	2	50
Pennsylvania Hospital*	Philadelphia	C B Lull	OBG	4 672	14 639	1	6	3	20
Philadelphia General Hospital*[1]	Philadelphia	F Kern	OBG	5 797		2	6	3	75
Temple University Hospital*[1]	Philadelphia	J R Willson	OBG	4 081	11 663	0	9	3	
Woman's Hospital	Philadelphia	D L. Ashton and A C Taylor	OBG	2,308	7,833	3	4	3	100
Mercy Hospital*[1]	Pittsburgh	R A Gillis and R J Frodey	OBG	3 119	863			2	100
Montefiore Hospital*	Pittsburgh	H. Cohen	OB	2 081	3 774	1	1	1	100

Numerical and other references will be found on page 462

12 OBSTETRICS AND GYNECOLOGY—Continued

Name of Hospital	Location	Chief of Service	Residencies Approved	Inpatients Treated	Outpatient Visits	First Year Residences Offered	Total Residences Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
Pittsburgh Hospital*[1]	Pittsburgh	R A D Gillis and E A Conti	OBG	2 403	985	1	2	2	125
Pittsburgh Medical Center[1] [76]	Pittsburgh	H A Power and J A Hepp	OBG	7 889	10 027	4	1[illegible]	3	41 67
St Francis Hospital*[1]	Pittsburgh		OBG	2 600	1 269			3	
St Margaret Memorial Hospital*[1]	Pittsburgh		OBG	1 244	551	1	1	2	100
South Side Hospital*[1]	Pittsburgh	J A New and J Hodgkiss	OBG	1 461	598			1	
Wilkes-Barre General Hospital*[1]	Wilkes-Barre Pa	J J Kocyan	OB	1 877	750	1	1	1	100
Providence Lying In Hospital	Providence R I	A L Potter	OB	1 412	11 436	2	2	1	110
Rhode Island Hospital*[1]	Providence R I	G Waterman	GYN	1 504	2 612	1	2	1	60
Roper Hospital*[1]	Charleston S C	I A Wilson	OBG	2 664	10 410	1	4	3	50
Columbia Hospital*[1]	Columbia S C	M E. Hutchinson	OBG	2,843	3 082	1	2	2	125
Greenville General Hospital*[1]	Greenville S C	J D Guess	OBG	4 145	2 810	2	4	2	125
Baroness Erlanger Hospital*[1]	Chattanooga Tenn	E F Buchner	OB	3 789	4 490	2	3	1	75
Baptist Memorial Hospital*	Memphis Tenn	M W Searight	OBG	5 067	1 151	1	3	2	75
John Gaston Hospital*[1]	Memphis Tenn	F E Whitacre	OBG	7 019	20,285	4	10	3	
Methodist Hospital*	Memphis Tenn	C Warde	OB	3 628	1 113	1	1	1	75
St. Joseph Hospital*[1]	Memphis Tenn	M J Roach	OBG	3 0[illegible]0	1 401	1	4	3	100
George W Hubbard Hospital of Meharry Medical College*[1]	Nashville Tenn	R S Duke	OB	1 247	3 742	1	4	2	75
Nashville General Hospital*	Nashville Tenn	R S Duke and M S Lewis	OBG	1 857	11 938	2	6	2	100
St Thomas Hospital*[1]	Nashville Tenn	M S Lewis	OB	2,5[illegible]7				2	150
Vanderbilt University Hospital*[1]	Nashville Tenn	J C Burch	OBG	2 522	8 811			3	
Baylor University Hospital*[1]	Dallas Texas	W K Strother	OBG	7 713	4 181	2	4	3	50
Methodist Hospital*[1]	Dallas Texas	D G Harrel	OBG	4 668	2 172	1	3	1	100
Parkland Hospital	Dallas Texas	W F Mengert	OBG	3 146	14,315	4	8	3	
Hotel Dieu Sisters Hospital[1] (St Joseph's Maternity Hospital)	*El Paso Texas*	E C Bernell	OB	1 299	9 304	1	1	2	150
Harris Hospital*[1]	Fort Worth Texas	R P McDonald	OBG	4 841	1 650	2	2	1	125
University of Texas Medical Branch Hospitals*[1]									
John Sealy Hospital	Galveston Texas	W R Cooke	OBG	1 959	11 079	2	6	3	100
Hermann Hospital*[1]	Houston Texas	C Pugsley and A L. Dippel	OBG	6 820	9 917	3	9	3	75
Jefferson Davis Hospital*	Houston Texas	H Johnson	OBG	4 745	30 335	3	8	1	25
Memorial Hospital[1]	Houston Texas	J N Tucker and D M Paton	OBG	3 811	202	2	[illegible]	3	150
Methodist Hospital*[1]	Houston Texas	J A Wall and D Wachsman	OBG	1 302	4,229			2	75
St Joseph's Infirmary*	Houston Texas	D V Wachsman	OB	7 434	1 939	3	5	2	100
Thomas D Dee Memorial Hospital*[1]	Ogden Utah	V L Ward	OBG	2 833		1	3	3	150
Dr W H Groves Latter Day Saints Hospital*	Salt Lake City	D R Skidmore and C L Vance	OBG	5 476	168	2	6	2	125
Holy Cross Hospital*[1]	Salt Lake City	I C Warenski	OBG	2 553	3 000	2	6	3	75
Salt Lake County General Hospital*[1]	Salt Lake City	F G Holstrom	OBG	1 114	3 111		3	2	50
Mary Fletcher Hospital*[1]	Burlington Vt	J Vans Maeck	OBG	1 446	5	1	1	3	100
Arlington Hospital[1]	Arlington Va	*J B Jacobs*	*OB*	1,858	230		1	1	100
University of Virginia Hospital*[1]	Charlottesville Va	W N Thornton	OBG	2 840	7 604	2	5	3	50
Riverside Hospital*[1]	Newport News Va	W R. Payne	OBG	1 945		2	2	1	175
De Paul Hospital*[1]	Norfolk Va	J R Kight	OBG	2 927	1,555	1	2	2	125
Norfolk General Hospital*[1]	Norfolk Va	R B Niccolls	OB	1 785	638	2	2	1	125
Medical College of Virginia Hospital Division*[1]	Richmond Va	H H Ware Jr	OB	5 837	11 008			3	46 50
King County Hospital Unit No 1 (Harborview)*[1]	Seattle	R R De Alvarez	OBG	1,559	5 247	1	3	3	100
Providence Hospital*[1]	Seattle	J Clancy	OB	2 183	1 007	1	1	1	110
Virginia Mason Hospital*[1]	Seattle	R. N Rutherford	OB	2 022		1	2	1	75
St Luke's Hospital*[1]	Spokane	R F Gillett	OBG	1,535		1	1	1	125
St Mary's Hospital*[1]	Huntington W Va	E J Humphrey	OB	2 157	1 062	1	1	1	125
State of Wisconsin General Hospital*[1] [53]	Madison Wis	J W Harris	OBG	901	6,326	1	3	3	25
Columbia Hospital*	Milwaukee	F J Stoddard	OB	1,236		1	1	1	75
Milwaukee County Hospital*[1] [50]	Milwaukee	R S Cron	OBC	1 960	4 883	1	4	3	50
Milwaukee Hospital*[1]	Milwaukee	F J Hofmeister	OBG	4 397	1 301	1	3	3	125
Mount Sinai Hospital*	Milwaukee	B F Urban	OBG	3,316	969	3	5	2	100
St. Joseph's Hospital*	Milwaukee	C Kilkenny	OBC	4 647		1	4	3	75
St. Luke's Hospital*[1]	Milwaukee	A Watts	OBG	2,336		1	1	1	205
St Mary's Hospital*[1]	Milwaukee	J D Owen and D Werner	OBG	2 564			3	2	100
Kapiolani Maternity and Gynecological Hospital[1]	Honolulu Hawaii	K S Tom and C C McCorriston	OBG	5 036		4	4	2	100
Queen's Hospital*[1]	Honolulu Hawaii	R. Sakimoto	OBC	2,393	4 452	2	3	2	100

13 OCCUPATIONAL MEDICINE

The following services are approved by the Council on Medical Education and Hospitals

Hospitals, 1 Assistant Residencies and Residencies, 2

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered	Total Residences Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
NONFEDERAL										
Saginaw General Hospital*	Saginaw Mich	R D Mudd	159	273,520	1	1	1	2	2	325

14 OPHTHALMOLOGY

The following services are approved by the Council on Medical Education and Hospitals

Hospitals 166 Assistant Residencies and Residencies, 551

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	First Year Residences Offered	Total Residences Offered	Beginning Stipend (Month)
UNITED STATES ARMY							
Letterman Army Hospital*	San Francisco	W A Weller	1,356	6 428			
Fitzsimons Army Hospital*	Denver	B T Bowers	3,52[illegible]	8 233		2	
Army Medical Center*[27]	Washington, D C	A. Lowry Jr	406	20 022	2	9	
Brooke Army Medical Center*[28]	San Antonio Texas	W T Sichi	1 089	10 940			
Gorgas Hospital*	Ancon C Z	H W Shreck	159	10 738	1	2	

Numerical and other references will be found on page 462

14 OPHTHALMOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	First Year Residencies Offered*	Total Residencies Offered*	Beginning Stipend (Month)
UNITED STATES NAVY							
U S Naval Hospital*	Oakland Calif	B N Ahl	286	11 514		2	
U S Naval Hospital*	San Diego, Calif	K. J Palmberg	269	18 826	3	3	
U S Naval Hospital*1	Bethesda Md	A J Delaney	396	3 728	2	5	
U S Naval Hospital*1	St Albans N Y	R K Hoch	124	8 369			
U S Naval Hospital*11	Philadelphia Pa	F Harbert	272				
UNITED STATES PUBLIC HEALTH SERVICE							
U S Public Health Service Hospital*1	New Orleans La	L M Smith	125	3 166	1	2	
U S Public Health Service Hospital*	Baltimore Md	W P Criffey					
U S. Public Health Service Hospital*1	Staten Island N Y	J B Peebles	314	5 179	1	3	
U S Public Health Service Hospital*1	Seattle Wash	H U Maness	209	3 969		3	
VETERANS ADMINISTRATION							
Veterans Admin. Hospital	Tuskegee Ala	H G Wiggins					
Veterans Admin Hospital*1	Long Beach Calif	G C Struble	354	2 178	1	3	
Veterans Admin Hospital*1	Los Angeles Calif	C S Mumma	499	934	1	3	
Veterans Admin Hospital	San Francisco Calif	D Harrington and M Fine	310	2 370	1	3	
Veterans Admin. Hospital*1	Chamblee Ga	F P Calhoun Jr	282	1 022	1	3	
Veterans Admin Hospital	Hines Ill	W A Mann	805			4	
Veterans Admin Hospital	Wadsworth, Kans	A. W McAlester	190			2	
Veterans Admin Hospital 1	Louisville Ky	W Schutz	353	1 555	1	2	
Veterans Admin Hospital	New Orleans La	J H Allen	174	426	1	3	
Veterans Admin. Hospital 1	Fort Howard Md	M E Randolph	131	126		1	
Veterans Admin. Hospital	Dearborn Mich	A D Ruedeman	258		1	1	
Veterans Admin Hospital 1	Minneapolis Minn	E W Hansen	208	480	3	3	
Veterans Admin Hospital 1	Jefferson Barracks Mo	H. Rosenbaum	3 475		1	3	
Veterans Admin Hospital 1	Brooklyn	M A Lasky	67		1	1	
Veterans Admin Hospital 1	New York City	A. G DeVoe	370	2 130	1	4	
Veterans Admin. Hospital	Cleveland	P J Parisi	282	1,544	1	2	
Veterans Admin Hospital*1	Oklahoma City	F A Quenzer	152		1	1	
Veterans Admin Hospital	Portland Ore	A. B Dykman	169	693		1	
Veterans Admin Hospital	Aspinwall Pa	J C Linn	130			3	
Veterans Admin Hospital11	Memphis Tenn	S D Maiden			1	2	
Veterans Admin. Hospital 1	Dallas Texas	M. Thomas	71		1	2	
Veterans Admin. Hospital*1	Houston Texas	E L. Goar	168		1	1	
Veterans Admin Hospital*1	McKinney Texas	S B Gostin	166	2 350	1	1	
Veterans Admin Hospital*	Richmond Va	E W Perkins	156	1 318	1	3	
Veterans Admin Hospital	Milwaukee	J B Hitz	165	403	3	3	
NONFEDERAL							
Jefferson Hillman Hospital*1	Birmingham Ala	A Callahan	1 007	4 196	2	4	50
Arkansas Baptist Hospital*1	Little Rock Ark	K W Cosgrove	513		2	2	100
General Hospital of Fresno County*1	Fresno Calif	H M Grayman	233	6 044	1	3	208
Eye and Ear Hospital of Los Angeles	Los Angeles	A H Miller	2 859	5 423	1	3	100
Los Angeles County Hospital*	Los Angeles	W J Endres	1 166	19 938	4	4	165
White Memorial Hospital*	Los Angeles	M W Nugent	769	9 915	1	2	120
San Diego County General Hospital*1	San Diego Calif	H Lucic	148	5 420	1	1	125
Franklin Hospital*1	San Francisco	C A Dickey	140	12 654	1	1	100
Greens Eye Hospital	San Francisco	V V Suglian	684	32 238	2	4	50
Stanford University Hospitals*1	San Francisco	A E Maumenee	764	9 841	1	3	50
University of California Hospital*1	San Francisco	F C Cordes	321	12 [illegible]0		4	75
University of Colorado Medical Center Colorado General Hospital*1	Denver	R W Danielson	131	8 110		3	75
Grace-New Haven Community Hospital New Haven Unit (University Service)*1	New Haven Conn	E Blake	412	7 054	1	2	40
Episcopal Eye Ear, and Throat Hospital 1	Washington D C	G V Simpson	1,555	28 052	2	6	25
Gallinger Municipal Hospital*1	Washington D C	E. Cummings and R A. Cox	186	4 674	1	2	100
Grady Memorial Hospital*1	Atlanta Ga	F P Calhoun Jr	515	16 61	2	6	20
Chicago Eye Ear Nose and Throat Hospital	Chicago	A A Stonehill	657	19,530		3	50
Cook County Hospital*1	Chicago	D T Vail	392	17 861		6	32
Illinois Eye and Ear Infirmary 1	Chicago	W F Hughes Jr	1 752	63 345	9	10	
Mercy Hospital*1	Chicago	L. C Hoffman	107	2 148	1	1	25
Michael Reese Hospital*1	Chicago	T N Zekman	540	5 169	1	2	25
Passavant Memorial Hospital*1	Chicago	D Vail	581	506	1	2	
Presbyterian Hospital*	Chicago	J M Donegan	344	7 632	1	2	25
Provident Hospital*1	Chicago	W M Jones	83		1	2	50
Research and Educational Hospitals*1	Chicago	W F Hughes	135	9,581	1	2	55
St Joseph Hospital*	Chicago	J Donegan	27	712	1	1	
St Luke s Hospital*1	Chicago	R C Gamble	302	2 293		2	25
University of Chicago Clinics*	Chicago	A C Krause	173	11 050	3	6	25
Wesley Memorial Hospital*1	Chicago	W Mann	349		1	2	25
Woodlawn Hospital*1	Chicago	F M. Whitsell	270	59	1	1	150
Indianapolis General Hospital*1	Indianapolis	E. W Dyar	182	7 448	1	2	80
Indiana University Medical Center*1	Indianapolis	R Masters	255	4 739	2	1	150
University Hospitals*1	Iowa City	A E Braley	1 453	4 638	2	6	50
University of Kansas Medical Center*1	Kansas City Kans	A Lemoine Jr	359	5 381	1	2	100
Louisville General Hospital*1	Louisville Ky	C D Townes	162	7,305		4	50
Charity Hospital of Louisiana*	New Orleans		1,543	20 092	1	3	25
Eye Ear Nose and Throat Hospital 1	New Orleans	W B Clark	1 375	21 711	11	17	
Touro Infirmary *1	New Orleans	E F Allgeyer	114	2 671	1	1	17
Baltimore Eye Ear and Throat Charity Hospital 1	Baltimore	C A Clapp	1 122	13 107	1	3	10
Johns Hopkins Hospital*1	Baltimore	A. C Wood	1 708	18,240	4	10	41 60
University Hospital*1	Baltimore	F E Knowles Jr	45	4 633	1	1	
Boston City Hospital*1	Boston	J J Regan	633	27 387		7	110
Massachusetts Eye and Ear Infirmary 1	Boston	E B Dunphy	3 060	43 095	6	11	41 66
Massachusetts Memorial Hospital*	Boston	R H Hopkins	306	3 470	1	2	50
University Hospital*1	Ann Arbor Mich	F B Fralick	530	12,980	3	9	124
City of Detroit Receiving Hospital*1	Detroit	A D Ruedemann	531	14 043	4	6	217
Harper Hospital*1	Detroit	A D Ruedemann	1,369	7 190	1	3	205
Henry Ford Hospital*1	Detroit	E L Whitney	452	23 824	2	4	225
Wayne County General Hospital and Infirmary *	Eloise Mich	F T May	314		1	2	252
Minneapolis General Hospital*1	Minneapolis	W K Haven	120	3 728	1	1	125
University of Minnesota Hospitals*1	Minneapolis	E Hansen	288		5	5	
Mayo Foundation	Rochester Minn	C W Rucker			4	11	135
Ancker Hospital*1	St Paul Minn	R O Leavenworth	115	4 020			91 50
Charles T Miller Hospital*1	St Paul Minn	E Burch	740	3,250	1	3	115
St Louis County Hospital*1	Clayton Mo.	D Bisno	80	3,390	1	2	95
Kansas City General Hospital No 1*	Kansas City Mo.	A W McAlester III	203	5 456	1	2	75
Barnes Hospital*	St Louis	L T Post	1 727	21 735		7	
Homer G Phillips Hospital*1	St. Louis	L. T Post	145	3 757	2	3	132 80
St Louis City Hospital*1	St Louis	D Bisno and R Mattis	175	4 925	1	2	123

Numerical and other references will be found on page 462

14 OPHTHALMOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
St Mary's Group of Hospitals*[1]	St Louis	J F Hardesty	268	8 400	1	3	35
University of Nebraska Hospital*[1]	Omaha	J H Judd	172	2 781	1	3	125
Jersey City Hospital*[1]	Jersey City N J	F N Brophy	227	9 382		5	35
Newark Eye and Ear Infirmary	Newark N J		1 200	7 626	2	2	
Brooklyn Eye and Ear Hospital[1]	Brooklyn	E C Place and W V Moore	2 780	51 785		8	
Jewish Hospital*[1]	Brooklyn	M A Lasky	164	3,594	1	3	50
Kings County Hospital*[1]	Brooklyn	W Moehle	481	13 647	3	4	
Long Island College Hospital*	Brooklyn	H F Schilback	148	3 495	2	3	25
Buffalo General Hospital	Buffalo	L J Koenig	331	3 102	2	2	25
Edward J Meyer Memorial Hospital*[1]	Buffalo	I J Koenig	154	5 187	2	3	100
Millard Fillmore Hospital*[1]	Buffalo	E B Hague	292	341	1	1	50
Queens General Hospital*[1]	Jamaica N Y	T D Angelo	232	7 185	1	2	80
Bellevue Hospital Div III and IV New York University*[1]	New York City	A C DeVoe	381	16 408	1	0	50
Beth Israel Hospital*[1]	New York City	E B Gresser	150	4 009	1	1	50
Bronx Eye and Ear Infirmary	New York City	N J Gould and M Jaffe	1 292	16,390	1	2	50
Goldwater Memorial Hospital*[1]	New York City	S Fox	1 629	1 801	1	3	80
Lenox Hill Hospital*	New York City	J J Reid	438	4 735	1	1	50
Manhattan Eye Ear and Throat Hospital	New York City	R T Paton	2 711	70 110		10	
Metropolitan Hospital*[1]	New York City	C A Turtz	69	5 456	1	1	130
Montefiore Hospital*[1]	New York City	S Gartner	71	2 385	1	1	60
Mount Sinai Hospital*[1]	New York City	H Minsky	400	12 438	2	2	50
New York City Hospital*[1]	New York City	W R Loewe	254	5 815	1	2	80
New York Eye and Ear Infirmary[1]	New York City	C Berens	6 404	126 254	5	13	
New York Hospital*[1]	New York City	J McLean	650	14,535	2	4	25
New York Polyclinic Medical School and Hospital*	New York City	H H Romaine	141	4 758	1	2	75
Presbyterian Hospital*[1] [21]	New York City	J H Dunnington	2 542	27 955	3	9	208
St Luke's Hospital*[1]	New York City	W C Frey	174	5,540	1	1	60
University Hospital*	New York City	A C DeVoe	208	6 198	1	3	80
Rochester General Hospital*[1]	Rochester N Y	E R Vernon	183	1 475			85
St Mary's Hospital*[1]	Rochester N Y	C Sullivan	308	2,206	1	2	125
Strong Memorial Rochester Municipal Hospitals*[1]	Rochester N Y	J F Gipner	466	4 959		2	41 66
Sea View Hospital[1]	Staten Island N Y	S Saltzman	2,565		1	1	140
Syracuse Medical Center*[1]	Syracuse N Y	H H Joy	256			1	125
Grasslands Hospital*[1]	Valhalla N Y	C Wood	94	4 671	1	3	125
Duke Hospital*[1]	Durham N C	W B Anderson	456	4 627	2	8	
McPherson Hospital[1]	Durham N C	S D McPherson	733	21 878	1	3	25
North Carolina Baptist Hospital*[1]	Winston-Salem N C	W Roberts	179	2 067	1	2	41 66
Cincinnati General Hospital*[1]	Cincinnati	D Lyle	334	8 930	2	4	
City Hospital*[1]	Cleveland	C L Miller	594	5 943		2	77
Cleveland Clinic Hospital[1]	Cleveland	R J Kennedy	342	21 945	2	12	
St Luke's Hospital*[1]	Cleveland	M W Jacobs	431	3,294	1	1	125
University Hospitals*[1]	Cleveland	A B Bruner	871	6 762	1	3	
Ohio State University Hospital*	Columbus Ohio	A M Culler	199	7,504	2	4	50
University Hospitals*[1]	Oklahoma City	J P McGee	384	3 834	2	2	50
University of Oregon Medical School Hospitals and Clinics*[1]	Portland Ore	K C Swan	231	14 679	2	6	85
George F Geisinger Memorial Hospital*[1]	Danville Pa	C H Jacobs	278	8 492	1	2	100
Graduate Hospital of the University of Pennsylvania*[1]	Philadelphia	E B Spaeth	721	3 745	3	5	
Hospital of the University of Pennsylvania*[1] [51]	Philadelphia	F H Adler	683	9,369		9	
Jefferson Medical College Hospital*	Philadelphia	A E Town	206	6 560	2	3	
Philadelphia General Hospital*[1]	Philadelphia	G J Dublin	156		1	2	75
Temple University Hospital*[1]	Philadelphia	G C Gibson	277	4 056		4	
Wills Hospital[1]	Philadelphia		4 026	108,806	12	12	
Pittsburgh Medical Center[76]	Pittsburgh	J G Linn	1 054	10 877	2	6	41 66
Robert Packer Hospital*[1]	Sayre Pa		279			1	150
Roper Hospital*[1]	Charleston S C	P Jenkins	122	2 734	1	1	80
Knoxville General Hospital*	Knoxville Tenn	H F Christenberry	57	792	1	1	85
John Gaston Hospital*	Memphis	P M Lewis	283	5 877	1	2	50
Memphis Eye Ear Nose and Throat Hospital	Memphis	P M Lewis	175	5 193	4	8	65
Nashville General Hospital*	Nashville	J T Bryan		929	1	1	100
University of Texas Medical Branch Hospital*[1] John Sealy Hospital	Galveston Texas	C S Sykes	258	4,560	1	2	50
Jefferson Davis Hospital*	Houston Texas	F L Goar	207	8 812		2	50
University of Virginia Hospital*[1]	Charlottesville Va	E Burton	360	3 428	1	3	50
Medical College of Virginia—Hospital Division*[1]	Richmond Va	R H Courtney	503	5 758			46 50
Gill Memorial Eye Ear and Throat Hospital[1] [11]	Roanoke Va	T C Gill					150
King County Hospital Unit No 1 (Harborview)*[1]	Seattle Wash	C D F Jensen	76	1 408	1	1	100
State of Wisconsin General Hospital*[1]	Madison Wis	F A Davis	557	4 843	1	3	25
St. Joseph's Hospital*[1]	Marshfield Wis	C L McCormick	145	79	1	3	300
Milwaukee County Hospital*[1]	Milwaukee	E F Carl	558	7 825	1	3	50

15 ORTHOPEDIC SURGERY

Type of training acceptable to Board A—adult orthopedics C—children's orthopedics F—fractures

The following services have been approved by the Council and the American Board of Orthopedic Surgery as offering acceptable training in adult orthopedics children's orthopedics and fractures Training in the basic sciences is given either as an integral part of these services or as a separate course Services collaborating in an integrated plan of training are designated by a program number a list of which is found on page 480.

Residents completing their training in these hospitals are eligible for full certification by the American Board of Orthopedic Surgery, including children's orthopedic surgery

Hospitals 187 Assistant Residencies and Residencies 637

Name of Hospital	Location	Chief of Service	Type of Training	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Program Identification	Beginning Stipend (Month)
UNITED STATES ARMY											
Brooke Army Medical Center*[28]	San Antonio Texas	M S Thompson	ACF	3 458	7 935	7	5				
FEDERAL SECURITY AGENCY											
Freedmen's Hospital*[1]	Washington D C	J R Cladden	ACF	296	5 781	10	7		1		
VETERANS ADMINISTRATION											
Veterans Admin Hospital	San Francisco Calif	F J Cox and J J Loutzenheiser	AF	334	826	4	1	1	3	[illegible]	

Numerical and other references will be found on page 462

15 ORTHOPEDIC SURGERY—Continued

Name of Hospital	Location	Chief of Service	Type of Training	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered[8]	Total Residencies offered[8]	Program Identification	Beginning Stipend (Month)
Veterans Admin. Hospital*[1]	Chamblee Ga	H D Smith	AF	622		3	1	2	4	6	
Veterans Admin Hospital	Hines Ill	H A. Sofield	AI	4 606		5	2		14	50	
Veterans Admin Hospital[1]	Indianapolis	C F Thompson	AF	273		2	1	1	1	8	
Veterans Admin Center[1]	Wadsworth Kans	R H. Kiene	AF	639		1	1	2	6	18	
Veterans Admin Hospital[1]	Louisville Ky	A K Fischer	AI	1 312	1 852	10	6	2	4	9	
Veterans Admin Hospital	New Orleans La	R H Alldredge	AI	837	734	4	3	2	4	10	
Veterans Admin Hospital	Fort Howard Md	W S Smith	AI	345	471			1	3	46	
Veterans Admin Hospital[1]	Boston (West Roxbury)	J Barr	AI	501	1 551	4	3	1	3	7	
Veterans Admin Hospital[1]	Minneapolis Minn	E. T Evans	AF	1 680	2 090	8	6	9	9	16	
Veterans Admin Hospital[1]	Brooklyn	A Schildhaus	AF	425		2	1	1	2	52	
Veterans Admin Hospital	Buffalo N Y		AI						2	21	
Veterans Admin Hospital[1]	New York City	P K Sauer	AI	727	1 381	7	5	1	4	22	
Veterans Admin Hospital[1]	Cleveland	R P Rizzo	AI	811	641	2	2	6	7	27	
Veterans Admin. Hospital*[1]	Oklahoma City	W K. West	AI	363				1	1	53	
Veterans Admin Hospital	Portland Ore	H C Blair	AF	599	1,285	3	2	1	3	54	
Veterans Admin Hospital[1]	Aspinwall Pa	D I Schwartz	AF	565		7	4		3	44	
Veterans Admin Hospital	Columbia S C	J T Green	AF	1 105	661			2	5	45	
Veterans Admin Hospital	Memphis Tenn	D M Street	AF	1 170	1 953	8	4	2	8	[illegible]	
Veterans Admin Hospital[1]	Dallas Texas	P M Girard	AF	450		1	1	1	3	17	
Veterans Admin. Hospital*[1]	Houston Texas	E M Cowart	AF	615		3	3	1	1	49	
Veterans Admin. Hospital*	Salt Lake City	J A Cubler	AF	342	92	1		1	1	34	
Veterans Admin. Hospital*	Richmond Va		AI	599	2 880	4	1	2	3	35	
Veterans Admin. Hospital	Milwaukee	P L. Carnesale	AI	774	874	8	6	6	6	60	
NONFEDERAL											
Jefferson Hillman Hospital*[1]	Birmingham Ala	J G Sherrill	ACI	1 414	4 196	23	6	1	1		
City Hospital*	Mobile Ala	W C Hannon	ACF	457	1 034	11	4	1	3		
Arkansas Children's Home and Hospital	Little Rock Ark	W V Newman	C	345	1,376	1	1	2	2	1	
Los Angeles County Hospital*[1]	Los Angeles	V P Thompson	ACF	4 057	42 433	200	14	11	11		
Orthopaedic Hospital	Los Angeles	A Brockway	ACF	2 527	57 653	5	4	3	5		
Samuel Merritt Hospital	Oakland Calif	H H Hitchcock	AI	1 482		7	5	2	2	2	
Children's Hospital*[1]	San Francisco	L C Abbott	C	359	1 460	2	1		2	2	
Franklin Hospital*[1]	San Francisco	L C Abbott and F C Bost	A	1 087	6 514	3	2	1	3	2	
San Francisco Hospital*[1]	San Francisco	E R Schottstaedt	AF						2	2 3	
Shriners Hospital for Crippled Children	San Francisco	F C Bost	C	236	3 010	1	1		[illegible]	2	
Stanford University Hospitals*[1]	San Francisco	D E King	AC	818	5 578	1			[illegible]	3	
University of California Hospital*[1]	San Francisco	L C Abbott	A	209	7 270				2	2	
Children's Hospital[1]	Denver	I F Hendryson	C	735	4 260	1			2	1	
University of Colorado Medical Center											
Colorado General Hospital*[1]	Denver	H L. Bernard	AF	376	2 309	12	8		1	4	
Denver General Hospital*[1] [24]	Denver	I E Hendryson	AI	614	2 210	37	17		1	4	
Hartford Hospital*[1]	Hartford Conn	M M Pike	AI	1 627	545	12	5	1	2	5	
Grace-New Haven Community Hospital New Haven Unit (University Service)*[1]	New Haven Conn	N Shutkin	AI	664	4 012	10	2		3	5	40
Hospital of St Raphael*[1]	New Haven Conn	D O Connor	AI	418	888	0		1	3	43	75
Newington Home and Hospital for Crippled Children	Newington Conn		C	400	3 698				2	5	100
Alfred I DuPont Institute of the Nemours Foundation[1]	Wilmington Del	A R Shands Jr	C	230	2 339				3	10 20	100
Gallinger Municipal Hospital*	Washington D C	M C Cobey and J Neviaser	ACF	340	5 876	18	7	3	5		100
American Legion Hospital for Crippled Children	St Petersburg Fla		C							7	
University Hospital*[1]	Augusta Ga	P B Wright	ACF	704	1 805	24	2	1	3		40
Emory University Hospital*	Emory University Ga	R P Kelly	C	490		3	2	1	1	6	50
Alexian Brothers Hospital*	Chicago		I							7	
Children's Memorial Hospital	Chicago	E L. Compere	C	178	2,293	1	1		1		75
Cook County Hospital*[1]	Chicago	F Shapiro	ACI	790	8 709	20	5		3		77
Northwestern University Medical Center											
Passavant Memorial Hospital*	Chicago	J K Stack and E D W Hauser	A	802	3 107	1	1			7	
Research and Educational Hospitals*[1]	Chicago	F A Chandler	ACI	720	10 331	5	4	2	6		55
St. Elizabeth Hospital*	Chicago	C S Scuderi	F	843	1 401	[illegible]		1	1	7	100
Shriners Hospital for Crippled Children	Chicago	H A Sofield	C	232	2 469					50	33
University of Chicago Clinics*	Chicago	C H Hatcher	ACI	619	5 596	[illegible]	[illegible]	1	1		25
Wesley Memorial Hospital*	Chicago	E L. Compere	AF	1 656		5	2	1	3	7	25
Evanston Hospital*[1]	Evanston Ill	V C Turner	AF	531	994	8	4	1	1	7	50
St. Francis Hospital*	Evanston Ill	J J Fahey	AF	557	2 617	16	1	1	2	7	150
West Suburban Hospital*	Oak Park Ill	H A Sofield	AI	565	1,259	8	5	1	1	33	150
Indianapolis General Hospital*[1]	Indianapolis	T Horwitz	AI	742	6 937	41	13	2	3	8	80
Indiana University Medical Center*[1]	Indianapolis	C Garceau	ACF	1 105	12 225	14	10	2	6	8	150
St. Vincent's Hospital*	Indianapolis	G J Garceau	AF	1 106	3 952	19	4	1	2	8	200
University Hospital*[1]	Iowa City	C Larson	ACI	2 213	4 011	8	1	3	5		50
University of Kansas Medical Center*[1]	Kansas City Kans	J B Weaver	ACF	636	3 364	11	8	1	3		100
Kosair Crippled Children Hospital	Louisville	C F Wood	C	490	2 855	3				9	100
Louisville General Hospital*[1]	Louisville	K A Fischer	AI	568	7 140	23	6	1	[illegible]	[illegible]	187
Charity Hospital of Louisiana*[1]	New Orleans										
Independent Unit		C C Battalora	ACF	793	8 997	23	1	1	3		25
Louisiana University		H T Simon	ACF	1 091	13 654	28		2	6		25
Tulane University		C A. Caldwell	ACF	1,230	15 008	38	5	2	6	10	25
Ochsner Foundation Hospital*[1]	New Orleans	C A. Caldwell	AF	295	5 562	1	1	2	4	56	125
Touro Infirmary*	New Orleans	C A Caldwell	ACI	601	1 172	7	0	1	2	10	17 50
Shreveport Charity Hospital*[1]	Shreveport La	T M Oxford	ACI	796	4 850	21	6	1	4		60
Baltimore City Hospital*[1]	Baltimore	A F Voshell	AF					1	2	58	15
Children's Hospital School	Baltimore	G E Bennett	C	645	73	2		2	3	10 57	
James Lawrence Kernan Hospital for Crippled Children	Baltimore	A F Voshell	C	34	4 688	1	1	2	2	58	100
Johns Hopkins Hospital*	Baltimore	R W Johnson Jr	AF	551	7 578	4	1	4	8	5	41 66
University Hospital*[1]	Baltimore	A F Voshell	AF	245	5 093	3		1	1	58	
Boston City Hospital*[1]	Boston	R Sullivan	AI	1 076	20 768	15	0	0	[illegible]	13 66	110
Children's Hospital*	Boston	W T Green	C	797	20 010	0	0	6	11	11	41 66
Massachusetts General Hospital*	Boston	J S Barr	ACI	683	9 042	6	0	1	6	11	11 66
Peter Bent Brigham Hospital*	Boston	W T Green	AI					1	1	11	11 66
Massachusetts Hospital School[1]	Canton Mass	I L Norton	F	92		0	0	2	2	11	
Shriners Hospital for Crippled Children	Springfield Mass	C H Crego Jr	C	773	2,330	1			2	73	150
Worcester City Hospital*[1]	Worcester Mass	J W O Meara	ACI	904		29	8	2	2		100
University Hospital*[1]	Ann Arbor Mich	C E Badgley	ACI	1,228	11 071	13	10	7	15		124
Children's Hospital[1]	Detroit	F J Fischer	C	517	3 192				2	12	125
City of Detroit Receiving Hospital*[1]	Detroit	A C Goetz	I	639	7 141	16	3	1	2	12	217
Harper Hospital*[1]	Detroit	A C Goetz	A	652	1 107	2	2	2	2	19	270

Numerical and other references will be found on page 462.

15 ORTHOPEDIC SURGERY—Continued

Name of Hospital	Location	Chief of Service	Type of Training	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered	Total Residences Offered	Program Identification	Beginning Stipend (Month)
Henry Ford Hospital*[1]	Detroit	C L Mitchell	ACF	1 171	15 269	7	4	2	6		225
Blodgett Memorial Hospital*[1]	Grand Rapids Mich	J T Hodgen	ACF	273	3 452	0	0	1	2		200
Borgess Hospital*[1]	Kalamazoo Mich	H Stryker	ACF	604	1 424	2	0	1	1		200
Shriners Hospital for Crippled Children [1]	Minneapolis	W H Cole	C	176	463	0	0		1	16	
University of Minnesota Hospitals*[1]	Minneapolis	W Cole	A	268		7		1	1	16	
Mayo Foundation	Rochester Minn	R K. Ghormley	ACF					5	14		135
Gillette State Hospital for Crippled Children	St Paul Minn	C C Chatterton	C	2 341	7 660	3	2		4	16	125
University Hospitals	Columbia Mo	W J Stewart	C	374	1,887				2	7	95
Children s Mercy Hospital	Kansas City Mo	N S Pickard	C	276	2 981			2	2	18	85
Kansas City General Hospital No 1*	Kansas City Mo	R L Diveley	AF	908	5 122	39	19		2	18	75
St Luke s Hospital*	Kansas City Mo	R. L Diveley	ACF	555				1	3	18	150
Barnes Hospital*	St Louis	J A. Key	ACF	1 068	4 813	7	3	1	5		25
St Mary s Group of Hospitals*[1]	St Louis	R M O'Brien	ACF	595	3 539	8	2	2	6		35
University of Nebraska Hospital*[1]	Omaha Nebr	W H Hamsa	ACF	178	698	7	5	1	3		125
Jersey City Hospital*[1]	Jersey City N J	H C Benjamin	ACF	652	10 156	41	5	2	5		35
Monmouth Memorial Hospital*[1]	Long Branch N.J	N S Ransohoff	ACF	706	1,351	6	5	1	3		133
Carrie Tingley Hospital for Crippled Children [1]	Hot Springs, N M	W L Minear	C	405	3,280	2	2		2	7	85
Albany Hospital*[1]	Albany N Y	J W Ghormley	AF	549	12 496	3	1	1	2	42	60
House of St Giles the Cripple [1]	Brooklyn	M Cleveland	C	177	10 849				2	26 41	60
Kings County Hospital*[1]	Brooklyn	C C Vitale	ACF	462	9 014	5	1	1	3		
Long Island College Hospital*[1]	Brooklyn	H C Fett	AF	576	8 049	3		2	3	39	25
St Charles Hospital Orthopedic Clinic	Brooklyn	H C Fett	C	272	6 975			3	3	52 39	100
Buffalo General Hospital*	Buffalo	F N Potts	AF	732	693	12	2	6	6	24	25
Children s Hospital [1]	Buffalo	F N Potts	C	365	1 218				3	24	50
Meadowbrook Hospital*	Hempstead N Y	O C Hudson	F	961		50	25	1	2	38	135
Nassau Hospital*[1]	Mineola N Y	O C Hudson	AF	1 725		13	1	1	2	38	110
Hospital for Joint Diseases*[1]	New York City	J Buchman and E B Kaplan	ACF	2 965	30 234	16	4	4	12		40
Hospital for Special Surgery	New York City	P D Wilson	ACF	1 475	24 029	6	4	4	10	22	110
Mount Sinai Hospital*[1]	New York City	R K Lippmann	ACF	371	6 453	7	2	3	3		50
New York Polyclinic Medical School and Hospital*	New York City		FS							26	
Presbyterian Hospital*	New York City	A DeF Smith	ACF	1 935	69 987	9	1	6	18		208
St Luke s Hospital*[1]	New York City	M Cleveland	ACF	750	5 794	7	4	1	3	41	60
St Charles Hospital for Crippled Children	Port Jefferson N Y	F S Child	C	623	5 406	5	1			38 43	100
Rochester General Hospital*[1]	Rochester N Y	H B Crawford	A	786	1 451	8	7		1	31	70
Strong Memorial Rochester Municipal Hospitals*[1]	Rochester N Y	R P Schwartz	ACF	919	4 787			2	6	31	41 66
Ellis Hospital* and Eastern New York Orthopedic Hospital School	Schenectady N Y		AC	619		3	2	1	1	42	125
St Vincent s Hospital*	Staten Island N Y		F							26	
Sea View Hospital [1]	Staten Island, N Y	D M Bosworth	A	903		4	1	3	3	26	140
Rehabilitation Hospital [1]	West Haverstraw N Y	J C McCauley Jr	AC	576	229	3		4	4	14	200
Charlotte Memorial Hospital*[1]	Charlotte N C	H Winkler	AF	1 332	1 660	14	7	1	3	48	100
Duke Hospital*[1]	Durham N C	L D Baker	ACF	785	5 698	6	2	5	15	19	166
North Carolina Orthopedic Hospital	Gastonia N C		C							19	
Children s Hospital [1]	Akron Ohio	P C Doran	C	482	2 322	4	3	1	2	15	200
City Hospital*[1]	Akron Ohio	P C Doran	AF	1 498	1 157	16	4	3	7	15	140
Children s Hospital [1]	Cincinnati	J A Freiberg	C	351	1 176			1	1	17	
Cincinnati General Hospital*[1]	Cincinnati	J A Freiberg	AF	190	5 801	1	0	2	5	17	
Jewish Hospital*[1]	Cincinnati	J A Freiberg	A	809	333	8	4	1	1	17	75
Cleveland Clinic Hospital [1]	Cleveland	J A Dickson	ACF	769	14 118	7	2	2	16		
University Hospitals*[1]	Cleveland	M Harbin	ACF	758	3 165	4		1	2		
Children s Hospital	Columbus Ohio	E H Wilson	C		4,500			2	2	25	150
Mount Carmel Hospital*[1]	Columbus Ohio	F H Wilson	AF	1 106	1 086	12	3	2	2	25	135
White Cross Hospital*[1]	Columbus Ohio	J D Wilson	AF	1 067		9	6	1	3	25	100
Elyria Memorial Hospital [1]	Elyria Ohio	C H Heyman	C	649	2,539	10	3	1	1	27	200
St. Vincent s Hospital*[1]	Toledo Ohio	A L Bershon	ACF	849		11	1		2		125
Bone and Joint Hospital	Oklahoma City	E D McBride	AF	1 895		8	4	1	5	53	150
St. Anthony Hospital*	Oklahoma City	W K West	A	1 252	492	12		1	1	53	150
University Hospitals*[1]	Oklahoma City	D H O Donoghue	ACF	1 215	8 128	8	1	6	6	53	50
Emanuel Hospital*[1]	Portland Ore	L S Lucas	AF	1 635		20	5	1	2	28	85
Shriners Hospital for Crippled Children	Portland Ore	L S Lucas	C	318	2,304					28	100
University of Oregon Medical School Hospitals and Clinics*[1]	Portland Ore	L S. Lucas	AF	501	6 192	31	15	2	6	28	85
State Hospital for Crippled Children	Elizabethtown Pa	T Outland	C	300	2,560			3	3	21 56	210
Hamot Hospital*[1] [79]	Erie Pa	C W Fortune	ACF	1,232	1 035	16	5	2	2		150
Children s Hospital of Philadelphia [1]	Philadelphia	J T Nicholson	C	161	2 718	2	2		2	23	
Graduate Hospital of the Univ of Pennsylvania*[1]	Philadelphia	J Nicholson	A	162	1 463			1	1	23	
Hospital of the University of Pennsylvania*[1]	Philadelphia	P C Colonna	ACF	628	5 519	1			7	20	
Jefferson Medical College Hospital*	Philadelphia	A F De Palma	AF	758	4 924	7	1	4	4	21	
Philadelphia General Hospital*[1]	Philadelphia	J Nicholson	ACF	712		89	15	2	5	23	75
Shriners Hospital for Crippled Children [1]	Philadelphia	J R Moore	C	300	3,573			1	3	29	75
Temple University Hospital*[1]	Philadelphia	J R Moore	AF	1 129	3 620	9	2		5	29	
Allegheny General Hospital*[1]	Pittsburgh	P B Steele	ACF	1 058	2 015	7	4		2	30	100
Children's Hospital	Pittsburgh	W O Markell	C	349	4 204	2	1			30 44	
Pittsburgh Medical Center [1] [76]	Pittsburgh	J S Donaldson	AF	350	2 240					30	41 66
St Francis Hospital*	Pittsburgh		A	291	1 083	1				30	
Robert Packer Hospital*[1]	Sayre Pa.	D R Baker	ACF	739	5 242	8	6		3		150
Rhode Island Hospital*[1]	Providence R I	H McCusker	ACF	1 482	11 861	34	14	1	4		60
Roper Hospital*[1]	Charleston S C	F A Hoshall	ACF	818	3,316	6	2	1	3	45	50
Greenville General Hospital*[1]	Greenville S C	F H Stelling	AF	690	1 433	12	1	1	1	19	
Shriners Hospital for Crippled Children	Greenville S C	F H Stelling	C	339	2,566			2	2	19 48	100
Campbell Clinic	Memphis Tenn	J S Speed	ACF	2 020	17 936	8	1	4	12		50
Baylor University Hospital*[1]	Dallas Texas	F L. Butte	A	1 393	612	6	1	1	2	32 49	50
Parkland Hospital*[1]	Dallas Texas	P M Girard	F	517	3 542	7	3	1	2	32	
Texas Scottish Rite Hospital for Crippled Children	Dallas Texas	B Carrell	C	600	4 820			1	3	32 47	75
Hermann Hospital*[1]	Houston Texas	E T Smith	ACF	1,223	786	4	1	1	4		50
Jefferson Davis Hospital*	Houston Texas	M E De Bakey	ACF	608	5 462	13	4	1	3	49	50
St Mark s Hospital*[1]	Salt Lake City	P A. Pemberton	C	884	229	2			1	31	100
Salt Lake County General Hospital*[1]	Salt Lake City	P Pemberton	F	112	1 467	6	3	1	3	34	50
University of Virginia Hospital*[1]	Charlottesville Va	J H Allan	ACF	655	4 245	7	3	2	5	14	50
Crippled Children s Hospital [1]	Richmond Va	H P Mauck	C	317					2	35	100
Medical College of Virginia—Hospital Division*[1]	Richmond Va	H P Mauck	AF	1 325	4,208	27	12			35	48 60
Children s Hospital	Seattle Wash	J F Le Cocq	C	553	5 667	1	1	3	3	36	90
King County Hospital Unit No 1 (Harborview)*	Seattle Wash	R. Anderson and I O McLemore	AF	908	3 892	36	22		1	36	135
Providence Hospital*[1]	Seattle Wash	I O McLemore	A	711	282	2	1			36	110
Shriners Hospital for Crippled Children	Spokane Wash	N R Brown	C	145	956				1	54	
State of Wisconsin General Hospital*[1]	Madison Wis	R E Burns	ACF	1 699	6 410	26	11	1	3	1	25
Columbia Hospital*	Milwaukee	H C Schumm	AF	761		8	4	3	3	37	75
Milwaukee Children s Hospital*	Milwaukee	A C Schmidt	C	352	2,249			2	2	37 40	
Shriners Hospital for Crippled Children	Honolulu Hawaii	J W White	C	175	4 769			1	1	50	100

Numerical and other references will be found on page 462

15 ORTHOPEDIC SURGERY—Continued

The following services have been approved by the Council and the American Board of Orthopedic Surgery as offering acceptable training in adult orthopedics and fractures Training in the basic sciences is given as an integral part of these services or as a separate course Services collaborating in an integrated plan of training are designated by a program number, a list of which is found on page 430

Residents completing their training in these hospitals are eligible for limited certification by the American Board of Orthopedic Surgery, not to include children's orthopedic surgery

Hospitals, 37 Assistant Residencies and Residencies 105

Name of Hospital	Location	Chief of Service	Type of Training	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered	Total Residences Offered	Program Identification	Beginning Stipend (Month)
UNITED STATES ARMY											
Letterman Army Hospital*	San Francisco	E A. Bray	AF	2,529	2,242	2	1				
Fitzsimons Army Hospital*	Denver	H S McBurney	AF	1 721	5 066				3		
Army Medical Center*[27]	Washington D C	A W Spittler	AF	1 470	5 730	2	2	2	10		
UNITED STATES NAVY											
U S Naval Hospital*	Oakland Calif	H A. Streit	AF	1 899	2 920	3	3		2		
U S. Naval Hospital*[1]	Bethesda Md	F P Kreuz	AF	1 170	3 175			2	4		
U S. Naval Hospital*[1]	Chelsea Mass	C F Morrison	AF	522	4 387			1	2		
U S Naval Hospital*[1]	St. Albans N Y	E H Osterloh	AF	873							
U S. Naval Hospital*	Philadelphia	H E Wiggins	AF	1 009	5 207	8	5				
UNITED STATES PUBLIC HEALTH SERVICE											
U S Public Health Service Hospital*[1]	Staten Island N Y	F J Krueger	AF	1,550	7 179	1	1	2	5		
VETERANS ADMINISTRATION											
Veterans Admin Hospital*	Long Beach Calif	S S Mathews	AF	940	1 736	4	4	2	6		
Veterans Admin Hospital*	Los Angeles	R Mazet, Jr	AF	2,582	3,554	2	2	3	7		
Veterans Admin. Hospital[1]	Fort Logan Colo	M E Gibbons	AF	1 016		1	3	1			
Veterans Admin. Hospital[1]	Framingham Mass	H H Faxon	AF	583	1 597	1	1	1	3		
Veterans Admin Hospital[1]	Jefferson Barracks Mo	F Jostes	AF	1 428		4	2	2	6		
Veterans Admin. Hospital	Lincoln Nebr	J E M Thomson	AF	426		2	1	1	3		
Veterans Admin. Hospital*[1]	McKinney Texas	V M Bryant	AF	935		2	1	2	4		
NONFEDERAL											
Lloyd Noland Hospital*	Fairfield Ala	C H Wilson	AF	535	9 995	1		1	3		225
White Memorial Hospital*	Los Angeles	G M Taylor	AF	518	5 091	5		2	3		120
San Diego County General Hospital*[1]	San Diego Calif	F E West	AF	381	3,505	30	3	1	2		125
St. Mary's Hospital*[1]	San Francisco	J Loutzenheiser	AF	1,342	960	4		2	2		100
St. Luke's Hospital*[1]	Chicago	J R Norcross	AF	552	3,310	6	2	1	2		25
Methodist Hospital*[1]	Indianapolis	J N Garber	AF	1 723		28	11	2	6		260
Lahey Clinic	Boston	G E Haggart	A	781	8 920	3	1	3	5	66	125
Mississippi Baptist Hospital*	Jackson Miss	T H Blake	AF	1 159	897	13		2	2		275
Jewish Hospital*[1]	Brooklyn	J Milgrim and M T Koven	AF	935	6 970	11	2	2	3		50
Methodist Hospital*[1]	Brooklyn	H P Lange Sr	AF	581	2,560	9	4	1	1		25
Edward J Meyer Memorial Hospital*[1]	Buffalo	P Blanco	AF	153	1 744	6	0	1	2		100
Queens General Hospital*[1]	Jamaica N Y	F C Courten	AF	337	12 852	11	2	1	3		80
Flower and Fifth Avenue Hospital*[1]	New York City	M J Wilson	AF	235	2 291					67	
Lenox Hill Hospital*	New York City	A Wiesenthal and W Galland	AF	504	1 765	10	2	1	1		50
Metropolitan Hospital*[1]	New York City	M J Wilson	AF	778	3,304	41	2	2	3	67	130
North Carolina Baptist Hospital*[1]	Winston Salem N C	R A Moore	AF	393	9,243	3	3	1	1		41 66
St. Luke's Hospital*[1]	Cleveland	W H McCaw	AF	1 247	2 468	15	4	1	3		100
Youngstown Hospital*	Youngstown Ohio	R R Morrall	AF	1 086	1,554	33	16	1	1		75
Hahnemann Hospital*[1]	Philadelphia	E O Geckeler	AF	955	7 806	9	5	2	4		50
University of Texas Medical Branch Hospitals*[1] John Sealy Hospital	Galveston Tex	C W N Eggers	AF	539	6 132	5	4	1	3		75

The following services are approved by the Council and the American Board of Orthopedic Surgery as offering acceptable training in one or more but not all categories of orthopedic surgery Hospitals included in this list are urged to develop a full three year program either independently or in collaboration with other institutions in order to assure applicants for appointment of an opportunity for completing their training with progressively graded responsibility

Hospitals 37 Assistant Residencies and Residencies, 58

Name of Hospital	Location	Chief of Service	Type of Training	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered	Total Residences Offered	Program Identification	Beginning Stipend (Month)
UNITED STATES NAVY											
U S Naval Hospital*	San Diego Calif	R. F Legge	AF	1,590	3 147	3	3	2	2		
VETERANS ADMINISTRATION											
Veterans Admin. Hospital[1]	Des Moines Ia	J C Feuling	AF	457	1 038				1		
Veterans Admin Hospital	Dearborn Mich	H E Pedersen	A	674	1 471	5	2	1	1		
NONFEDERAL											
Children's Hospital*[1]	Los Angeles	J C Wilson	C	632	5,522				2		150
Highland Alameda County Hospital*[1]	Oakland Calif	L. Barnard	AF	726	4 973	65	3		2		145
St Joseph's Hospital*	San Francisco	R Soto-Hall	A	854	302	6		1	1		100
Santa Clara County Hospital*[1]	San Jose Calif	V Ahnlund	AF	174	4 110	3	1		1		235
Sonoma County Hospital	Santa Rosa Calif		A								
Hope Haven Hospital[1]	Jacksonville Fla	F Fort	C	319	1 297			1	1		100
Jackson Memorial Hospital*[1]	Miami Fla	A. H Weiland	ACF	1,690	4 748	24	11	1	3		60
Scottish Rite Hospital for Crippled Children	Decatur Ga	J H Kite	C	307	3 670			1	1		150
Illinois Masonic Hospital*[1]	Chicago	W Fisher and C N Pease	AF	794	5,264	16	2	1	1		50
Michael Reese Hospital*[1]	Chicago	P Lewin	AC	840	3 247	8	5	1	3		25
St. Francis Hospital*[1]	Peoria Ill	H E Cooper	ACF	789	3,558			1	1		100
Iowa Methodist Hospital*[1]	Des Moines Iowa	D N Gibson	AF	555		7	2	1	1		100
Mercy Hospital[1]	Iowa City Iowa	A. Steindler	A	728	3 113	3	2	2	2		75
Shriners Hospital for Crippled Children	Shreveport La	G A Caldwell	C	166	959	1	0	1	1		100

Numerical and other references will be found on page 462

15 ORTHOPEDIC SURGERY—Continued

Name of Hospital	Location	Chief of Service	Type of Training	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[a]	Total Residences Offered[a]	Program Identification	Beginning Stipend (Month)
St Louis City Hospital*[1]	St Louis	E Holscher and T B Horwitz	F	866	4 824	64	3	1	2		123 50
Shriners Hospital for Crippled Children	*St Louis*	*C H Crego Jr*	C	273	2 330	1			2		100
Nebraska Orthopedic Hospital [1]	Lincoln Nebr	H W Orr	C	850	4 200	12	7		2		150
Hospital for Crippled Children	Newark N.J	H H Kessler and T Nicola	AC	797	7 198	3		1	2		75
New Jersey Orthopaedic Hospital	Orange N J	H W Smith	AC	821	18 341	3	1	1	2	80	90
Orange Memorial Hospital*[1]	Orange N J	H Briggs	F	438	619	15	3	1	1	80	100
Orthopaedic Hospital and Dispensary	Trenton N.J	R B Ernest	A	457	6 347	7		1	1		150
Binghamton City Hospital*[1]	Binghamton N Y	A Carpenter	AC	414	40			1	2		136 60
Millard Fillmore Hospital*[1]	Buffalo	P Blanco	A	453	8	9	2	1	1		50
Bellevue Hospital Div IV New York University*[1]	New York City	W A L Thompson	AC	484	3 710	1	0		5		50
New York Hospital*[1]	New York City	F L Liebolt	AC	450	8 609	4		1	2		25
Mount Sinai Hospital*[1]	Cleveland	R S Reich	AF	1 400	2 633	4	0	1	1		100
Reading Hospital*[1]	Reading Pa	E J Morrissey	AF	681	901	10	9	1	1		125
Columbia Hospital*[1]	Columbia S C	W A Boyd	AC	1 492	7 190	12	7	1	2		125
Baroness Erlanger Hospital*[1]	Chattanooga Tenn		AF	1 097	1,354	26	6				75
St Joseph's Infirmary*	Houston Texas	I S McReynolds	AF	394	1 641	1	1	1	1		150
Scott and White Memorial Hospital*[1]	Temple Texas	H B Macey	AF	607					2		200
Charleston General Hospital*[1]	Charleston W Va	G Miyakawa	AF	763	6 035	12	5	1	2		125
St. Mary's Hospital*	Huntington, W Va	F A Scott	AF	1 122	709	7	2	1	1	78	100
Morris Memorial Hospital	Milton W Va	F A Scott	C	571	23	18	7		2	78	150

PROGRAM IDENTIFICATION

Program Number	Hospital	Location
1	Veterans Admin Hospital	Memphis
	Arkansas Children's Home and Hospital	Little Rock Ark
	State of Wisconsin General Hospital	Madison Wis
2	Veterans Admin Hospital	San Francisco
	Samuel Merritt Hospital	Oakland
	Children's Hospital	San Francisco
	Franklin Hospital	San Francisco
	San Francisco Hospital	San Francisco
	Shriners Hospital for Crippled Children	San Francisco
	University of California Hospital	*San Francisco*
3	Veterans Admin Hospital	San Francisco
	San Francisco Hospital	*San Francisco*
	Stanford University Hospital	San Francisco
4	Children's Hospital	Denver
	Colorado General Hospital	Denver
	Denver General Hospital	Denver
5	Hartford Hospital	Hartford Conn
	Grace-New Haven Community Hospital New Haven Unit (University Service)	New Haven Conn
	Newington Home and Hospital for Crippled Children	Newington Conn
6	*Veterans Admin Hospital*	Chamblee, Ga
	Emory University Hospital	Emory University Ga.
7	Alexian Brothers Hospital	Chicago
	Children's Memorial Hospital	Chicago
	Passavant Memorial Hospital	Chicago
	St. Elizabeth Hospital	Chicago
	Wesley Memorial Hospital	Chicago
	Evanston Hospital	Evanston Ill
	St Francis Hospital	Evanston Ill
	University Hospitals	Columbia Mo
	Carrie Tingley Hospital for Crippled Children	Hot Springs, N M.
	American Legion Hospital For Crippled Children	St. Petersburg Fla
8	Veterans Admin Hospital	Indianapolis
	Indianapolis General Hospital	Indianapolis
	Indiana University Medical Center	Indianapolis
	St Vincent's Hospital	Indianapolis
9	Veterans Admin Hospital	Louisville
	Kosair Crippled Children Hospital	Louisville
	Louisville General Hospital	Louisville
10	Veterans Admin Hospital	New Orleans
	Charity Hospital of Louisiana Tulane University Unit	New Orleans
	Touro Infirmary	New Orleans
11	Children's Hospital	Boston
	Massachusetts General Hospital	Boston
	Peter Bent Brigham Hospital	Boston
12	Children's Hospital	Detroit
	City of Detroit Receiving Hospital	Detroit
	Harper Hospital	Detroit
13	Veterans Admin Hospital	Boston
	Boston City Hospital	Boston
	Massachusetts Hospital School	Canton Mass
14	Rehabilitation Hospital	West Haverstraw N Y
	University of Virginia Hospital	Charlottesville Va
15	Children's Hospital	Akron Ohio
	City Hospital	Akron Ohio
16	Veterans Admin Hospital	Minneapolis
	Shriners Hospital for Crippled Children	Minneapolis
	University of Minnesota Hospitals	Minneapolis
	Gillette State Hospital for *Crippled Children*	St Paul Minn
17	Children's Hospital	Cincinnati
	Cincinnati General Hospital	Cincinnati
	Jewish Hospital	Cincinnati
18	Veterans Admin Hospital	Wadsworth, Kans
	Children's Mercy Hospital	Kansas City Mo
	Kansas City General Hospital No 1	Kansas City Mo
	St. Luke's Hospital	Kansas City Mo
19	Alfred I du Pont Institute of the Nemours Foundation	Wilmington Del.
	Duke Hospital	Durham N C
	North Carolina Orthopaedic Hospital	Gastonia N C
	Greenville General Hospital	Greenville S C
20	Alfred I du Pont Institute of the Nemours Foundation	Wilmington Del
	Hospital of the University of Pennsylvania	*Philadelphia*
21	State Hospital for Crippled Children	Elizabethtown Pa.
	Jefferson Medical College Hospital	Philadelphia
22	*Veterans Admin Hospital*	*New York City*
	Hospital for Special Surgery	New York City
23	Children's Hospital	Philadelphia
	Graduate Hospital of the University of Pennsylvania	Philadelphia
	Philadelphia General Hospital	Philadelphia
24	Veterans Admin Hospital	Buffalo
	Buffalo General Hospital	*Buffalo*
	Children's Hospital	Buffalo
25	Children's Hospital	Columbus Ohio
	Mount Carmel Hospital	Columbus Ohio
	White Cross Hospital	Columbus Ohio
26	House of St. Giles the Cripple	Brooklyn
	New York Polyclinic Medical School and Hospital	New York City
	St Vincent's Hospital	Staten Island N Y
	Seaview Hospital	Staten Island N Y
27	Veterans Admin Hospital	Cleveland
	Elyria Memorial Hospital	Elyria Ohio
28	Emanuel Hospital	Portland Ore
	Shriners Hospital for Crippled Children	Portland Ore
	University of Oregon Medical School Hospitals and Clinics	Portland Ore
29	Shriners Hospital for Crippled Children	Philadelphia
	Temple University Hospital	Philadelphia
30	Allegheny General Hospital	Pittsburgh
	Children's Hospital	Pittsburgh
	Presbyterian Hospital	Pittsburgh
	St Francis Hospital	Pittsburgh
31	Rochester General Hospital	Rochester N Y
	Strong Memorial Rochester Municipal Hospitals	Rochester N Y
32	Baylor University Hospital	Dallas Texas
	Parkland Hospital	Dallas Texas
	Texas Scottish Rite Hospital for Crippled Children	Dallas Texas
33	West Suburban Hospital	Oak Park, Ill
	Shriners Hospital for Crippled Children	Springfield Mass
34	Veterans Admin Hospital	Salt Lake City
	St. Mark's Hospital	Salt Lake City
	Salt Lake County General Hospital	Salt Lake City
35	*Veterans Admin Hospital*	Richmond Va
	Crippled Childrens Hospital	Richmond Va
	Medical College of Virginia-Hospital Division	Richmond Va
36	Children's Orthopedic Hospital	Seattle
	King County Hospital Unit No 1 (Harborview)	Seattle
	Providence Hospital	Seattle
37	*Columbia Hospital*	Milwaukee
	Milwaukee Children's Hospital	Milwaukee
38	Meadowbrook Hospital	Hempstead, N Y
	Nassau Hospital	Mineola N Y
	St Charles Hospital for Crippled Children	Port Jefferson N Y

Numerical and other references will be found on page 462

PROGRAM IDENTIFICATION—Continued

Program Number	Hospital	Location
39	Long Island College Hospital	Brooklyn
	St Charles Hospital Orthopedic Clinic	Brooklyn
40	Veterans Admin Hospital	Milwaukee
	Milwaukee Children's Hospital	Milwaukee
41	House of St Giles the Cripple	Brooklyn
	St Luke's Hospital	New York
42	Albany Hospital	Albany N Y
	Ellis Hospital and Eastern New York Orthopedic Hospital School	Schenectady N Y
43	Hospital of St Raphael	New Haven Conn
	St Charles Hospital for Crippled Children	Port Jefferson N Y
44	Veterans Admin. Hospital	Aspinwall Pa
	Children's Hospital	Pittsburgh
45	Veterans Admin Hospital	Columbia S C
	Roper Hospital	Charleston S C
46	Veterans Admin Hospital	Fort Howard Md
	Children's Hospital School	Baltimore
47	Veterans Admin Hospital	Dallas Texas
	Texas Scottish Rite Hospital for Crippled Children	Dallas Texas
48	Charlotte Memorial Hospital	Charlotte N C
	Shriners Hospital for Crippled Children	Greenville S C
49	Veterans Admin Hospital	Houston Tex.
	Jefferson Davis Hospital	Houston Tex.
	Baylor University Hospital	Dallas Tex
50	Veterans Admin Hospital	Hines Ill
	Shriners Hospital for Crippled Children	Chicago
	Shriners Hospital for Crippled Children	Honolulu Hawaii
52	Veterans Admin Hospital	Brooklyn
	St Charles Hospital Orthopedic Clinic	Brooklyn
53	Veterans Admin Hospital	Oklahoma City
	Bone and Joint Hospital	Oklahoma City
	St Anthony Hospital	Oklahoma City
	University Hospitals	Oklahoma City
54	Veterans Admin Hospital	Portland Ore
	Shriners Hospital for Crippled Children	Spokane Wash
56	Ochsner Foundation Hospital	New Orleans
	State Hospital for Crippled Children	Elizabethtown Pa
57	Children's Hospital School	Baltimore
	Johns Hopkins Hospital	Baltimore
58	Baltimore City Hospital	Baltimore
	James Lawrence Kernan Hospital for Crippled Children	Baltimore
	University Hospital	Baltimore
66	Boston City Hospital	Boston
	Lahey Clinic	Boston
67	Flower and Fifth Avenue Hospital	New York City
	Metropolitan Hospital	New York City
78	St Mary's Hospital	Huntington W Va
	Morris Memorial Hospital	Milton W Va
80	New Jersey Orthopaedic Hospital	Orange N.J
	Orange Memorial Hospital	Orange N.J

16 OTOLARYNGOLOGY

The following services have been approved by the Council and the American Board of Otolaryngology This approval is considered effective through July 1, 1952 Prior to that date, all services presently approved will be reviewed to determine whether or not approval will be continued and to determine also the number of years of training in individual hospitals for which approval will be granted

A revised list of approved residencies in otolaryngology will appear in an issue of The Journal, the latter part of December Physicians planning to apply for residency training in otolaryngology to begin on or after July 1, 1952 should consult this list in making application for appointment

Hospitals, 137 Assistant Residencies and Residencies 409

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	First Year Residencies Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES ARMY							
Letterman Army Hospital*	San Francisco	W A Weller	1 949	3 967			
Army Medical Center*[27]	Washington D C	V J Erkenbeck	1 037	24 001	2	7	
Brooke Army Medical Center*[28]	San Antonio Texas	H. S Murphey	1 148	8 956			
UNITED STATES NAVY							
U S. Naval Hospital*	Oakland Calif	B N Ahl	930	9 701		2	
U S Naval Hospital*	San Diego Calif	L. E Wible	854	8 668	2	2	
U S. Naval Hospital*[1]	Bethesda Md	A J Delaney	1 722	4 570	2	5	
U S Naval Hospital*	Philadelphia	F Harbert	1 096	28,573			
VETERANS ADMINISTRATION							
Veterans Admin Hospital*[1]	Long Beach Calif	S Kaplan	1 508	1 830	1	3	
Veterans Admin Hospital*[1]	Los Angeles Calif	C S Mumma	972	2 015	1	3	
Veterans Admin Hospital	San Francisco	W P Work and L. F Morrison	932	3,394	1	3	
Veterans Admin Hospital*[1]	Chamblee Ga	L. Brown	252	943	1	3	
Veterans Admin Hospital	Hines Ill	F L Lederer	1 724			7	
Veterans Admin Hospital[1]	Wadsworth, Kans	N E Lacy	510		1	3	
Veterans Admin Hospital[1]	Louisville, Ky	G Uhde	724	2 753	1	2	
Veterans Admin Hospital	Boston (West Roxbury)	J Trakas	213	778			
Veterans Admin Hospital[1]	Framingham Mass	E. H. Toumb	447	1,812	1	2	
Veterans Admin. Hospital[1] [52]	Minneapolis	H. Hanson	779	480	6	6	
Veterans Admin Hospital[1]	Jefferson Barracks Mo	R Votaw	4,387		1	3	
Veterans Admin Hospital[1]	New York City	D H Jones	682	2 481	1	4	
Veterans Admin. Hospital[1]	Cleveland	D W Shuster	405	2 075	1	3	
Veterans Admin Hospital	Portland Ore	G L. Boyden	202	1 255		1	
Veterans Admin Hospital[1]	Aspinwall Pa	R. J Caparosa	435			3	
Veterans Admin Hospital	Memphis Tenn	S D Maiden	1 054	1,007	2	[illegible]	
Veterans Admin Hospital[1]	Dallas Texas	C D Winborn	281		1	2	
Veterans Admin Hospital*[1]	Houston Texas	H H Harris	336		1	1	
Veterans Admin Hospital	Milwaukee	G D Straus	288	620	3	3	
NONFEDERAL							
Jefferson Hillman Hospital*[1]	Birmingham Ala.	G F Fisher	884	6 702		1	60
Children's Hospital*[1]	Los Angeles	A. H Miller	1 550	3 651		1	100
Eye and Ear Hospital of Los Angeles	Los Angeles	A H Miller	2 859	5 423	1	2	100
Los Angeles County Hospital*[1]	Los Angeles	J M Brown	2 965	17 500	4	4	165
White Memorial Hospital*	Los Angeles	B N Colver	1 010	7 901	1	2	120
San Diego County General Hospital*[1]	San Diego Calif	B P Cunningham	340	3 030	1	1	125
Children's Hospital*[1]	San Francisco	R C Martin	1 083	1 821	1	1	50
Stanford University Hospitals*[1]	San Francisco	R C McNaught	693	8,270		2	50
University of California Hospital*[1] [52]	San Francisco	L. F Morrison	576	8 681		2	75
University of Colorado Medical Center							
Colorado General Hospital*	Denver	H L Hickey	168	5 [illegible]		2	75
Denver General Hospital*[1]	Denver	H. L Hickey	276	779		1	75
Grace-New Haven Community Hospital New Haven Unit (University Service)*[1]	New Haven Conn	J A Kirchner	689	4 945	1	3	40
Episcopal Eye, Ear and Throat Hospital[1]	Washington D C	D B Moffett	4,522	22 327	2	4	25
Gallinger Municipal Hospital*[1]	Washington D C	S Burtoff	786	4 733	1	2	100
Grady Memorial Hospital*[1]	Atlanta Ga	W C Warren	401	9 702	1	3	20

Numerical and other references will be found on page 462

16 OTOLARYNGOLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	First Year Residencies Offered*	Total Residencies Offered*	Beginning Stipend (Month)
Cook County Hospital*[1]	Chicago	R W Kerwin	1 373	27 196		5	22
Illinois Eye and Ear Infirmary[1]	Chicago	F L Lederer	2 045	36 968	6	12	
Mercy Hospital*[1]	Chicago	R. W Kerwin	302	900	1	1	25
Presbyterian Hospital*	Chicago	S A Friedberg	761	3,287	1	2	25
Research and Educational Hospitals*[1]	Chicago	F E Lederer	586	12 293	1	2	65
St Luke's Hospital*[1]	Chicago	W Theobald	1 274	1 901	1	2	25
University of Chicago Clinics*	Chicago	J R Lindsay	417	8 081		3	25
Indianapolis General Hospital*[1]	Indianapolis	R M Dearmin	957	7 267	1	2	80
Indiana University Medical Center*[1]	Indianapolis	C H McCaskey	393	3 313	1	3	150
University Hospitals*[1]	Iowa City	D M Lierle	2 407	5 218	3	10	50
University of Kansas Medical Center*[1]	Kansas City Kans	G O Proud	832	3 436	1	2	100
Louisville General Hospital*[1]	Louisville	J S Bumgardner	366	5 663		2	50
Charity Hospital of Louisiana*[1]	New Orleans		2 497	23 619	1	3	25
Eye Ear Nose and Throat Hospital[1]	New Orleans	L W Alexander	4 107	30 858	0	16	
Touro Infirmary*[1]	New Orleans	A J McComiskey	1 162	2 419	1	1	17
Baltimore Eye Ear and Throat Charity Hospital[1]	Baltimore	J I Kemler	2 709	7,538	1	3	10
Johns Hopkins Hospital*	Baltimore	S J Crowe	1 354	10 326	2	7	41 66
†South Baltimore General Hospital*[1]	Baltimore	S L Fox	687	1 497	1	2	125
University Hospital*[1]	Baltimore	E A Looper	645	2 778		1	
Beth Israel Hospital*[1]	Boston	G B Fred	685	2 807	1	1	41 66
Boston City Hospital*[1]	Boston	E S Monahan	3 655	18,513	3	6	90
Lahey Clinic	Boston	W B Hoover	671	10 718		4	1,5
Massachusetts Eye and Ear Infirmary	Boston	L A Schall	2 725	24,508	5	9	41 66
Massachusetts Memorial Hospitals*	Boston	L F Johnson	394	1 747	1	1	50
University Hospital*[1]	Ann Arbor Mich	A C Furstenberg	736	10 457	2	8	124
City of Detroit Receiving Hospital*[1]	Detroit		574	4 917	1	2	217
Harper Hospital*[1]	Detroit	W Warren	3,353	2 721	1	3	205
Henry Ford Hospital*[1]	Detroit	J L Dill	1 049	17 701	1	4	225
University of Minnesota Hospitals*[1, 52, 81]	Minneapolis	L R Boies	390		3	3	
Mayo Foundation	Rochester Minn	H I Lillie			2	6	135
Kansas City General Hospital No 1*	Kansas City Mo	N F Lacy	582	4 394	1	1	75
Barnes Hospital*[53]	St Louis	T E Walsh	3 260	12 906		8	
Homer G Phillips Hospital*[1]	St. Louis	H M Cutler	409	3 108			122
St. Louis City Hospital*[1]	St Louis	R E Votaw	282	5 523		1	123 80
St. Mary's Group of Hospitals*[1]	St Louis	B J McMahon	701	5 081	1	3	35
Jersey City Hospital*[1]	Jersey City N J	M G Borrone	1 893	7 672	2	5	35
Newark City Hospital*	Newark N J	H B Orton	562	3 120	1	2	100
Newark Eye and Ear Infirmary	Newark N J		1,368	4 431	2	2	
Albany Hospital*	Albany N Y	B M Volk	657	1,290	1	2	80
Brooklyn Eye and Ear Hospital[1]	Brooklyn	J P Baker and G R O Brian	7 430	50 177		6	
Jewish Hospital*[1]	Brooklyn	C Kaplan	194	2 629	1	2	65
Kings County Hospital*[1]	Brooklyn	E A Sunde	1,337	7 208	1	2	
Long Island College Hospital*[1]	Brooklyn	C R Weeth	784	2 365	1	3	25
Buffalo General Hospital*	Buffalo	H Bozer	729	2 043	3	3	25
Edward J Meyer Memorial Hospital*[1]	Buffalo	M L. Gerstner	173	2 463	1	3	100
Queens General Hospital*[1]	Jamaica N Y	M S Bender	560	3 693	1	2	80
Bellevue Hospital Div III and IV New York University*[1]	New York City	J F Daly	2 093	18 526	4	8	50
†Beth Israel Hospital*[1]	New York City	M L Som	613	3,229	1	1	50
Flower and Fifth Avenue Hospitals*[1]	New York City	J A W Hetrick	101	3,389	2	2	
Harlem Hospital*[1]	New York City	H J Burman	657	8 663	1	1	80
Lenox Hill Hospital*	New York City	C F Oberrender	1 481	3 433		1	60
Manhattan Eye Ear and Throat Hospital	New York City	M F Jones	8,524	55 733		8	
Metropolitan Hospital*[1]	New York City	J A W Hetrick	637	6 078	1	2	80
Mount Sinai Hospital*[1]	New York City	R Kramer	749	8 963	2	2	50
New York City Hospital*[1]	New York City	O C Risch	560	7,597	1	2	80
New York Eye and Ear Infirmary[1]	New York City	J M Smith	6 404	126 254	4	9	
New York Hospital*	New York City	J Moore	1 856	13 450	2	4	25
New York Polyclinic Medical School and Hospital*	New York City	W W Morrison and R Almour	533	6 613	2	4	75
Presbyterian Hospital*[1]	New York City	E P Fowler Jr	1 659	19 113	4	8	208
Roosevelt Hospital*[1]	New York City	R C Grove	686		1	8	
St Luke's Hospital*[1]	New York City	V C McCuaig	1 027	7 676	1	8	60
University Hospital*	New York City	J F Daly	863	4,467	1	8	60
Rochester General Hospital*[1]	Rochester N Y	C B Hert	1,231	1 482			65
Strong Memorial-Rochester Municipal Hospitals*[1]	Rochester N Y	C A Heatly	1 092	4,029		2	41 66
Sea View Hospital[1]	Staten Island N Y	J Gilbert	2 816		2	2	140
State University Medical Center*[1, 59]	Syracuse N Y	G D Hoople	1 104	268		1	125
Grasslands Hospital*[1]	Valhalla N Y	J R. Emery	223	2 193	1	2	125
Duke Hospital*[1]	Durham N C	W W Eagle	563	2 861			
North Carolina Baptist Hospital*[1]	Winston Salem N C	J A. Harrill	604	2,275	2	3	41 66
Cincinnati General Hospital*[1]	Cincinnati	H Goodyear	693	6,200	1	2	
City Hospital*[1]	Cleveland	C W Engler	169	4,831		2	77
Cleveland Clinic Hospital[1]	Cleveland	H E. Harris	800	14 365	2	12	
St. Luke's Hospital*[1]	Cleveland	T W Thoburn	2 673	1,392	1	2	125
University Hospitals*[1]	Cleveland	C C R Jackson	1 981	4 064	1	2	
Ohio State University Hospital*[1]	Columbus Ohio	H C Beatty	329	2 630		2	50
University Hospitals*	Oklahoma City	L C McHenry	269	1 998	1	1	50
University of Oregon Medical School Hospitals and Clinics*[1]	Portland Ore	G L. Boyden	698	5 335	1	3	85
George F Geisinger Memorial Hospital*[1]	Danville Pa	F W Davidson	1 090	0,284	1	3	100
Graduate Hospital of the University of Pennsylvania*[1]	Philadelphia	E H Campbell	1 406	3 308	2	4	
Hospital of the University of Pennsylvania*[1]	Philadelphia	H P Schenck	1 857	6 083		6	
Jefferson Medical College Hospital*	Philadelphia	L H Clerf	2 133	12 098	3	3	
Pennsylvania Hospital*	Philadelphia	E H Campbell	630	3,370	1	1	20
Temple University Hospital*[1]	Philadelphia	M S Ersner	1 758	2 640		1	
Mercy Hospital*[1]	Pittsburgh	W L Allison	1 620	2 694			100
Pittsburgh Medical Center[76]	Pittsburgh	T B McCollough	4 592	5 664	2	4	41 60
Robert Packer Hospital*[1]	Sayre Pa	H D Rentschler	1 100	10 691			150
Knoxville General Hospital*	Knoxville Tenn	H E Christenbery	263	782			95
†John Gaston Hospital*	Memphis Tenn	C D Blassingame	683	6,280	1	2	50
University of Texas Medical Branch Hospitals*[1] John Sealy Hospital	Galveston Texas	J M Robison	359	6 612	1	8	50
Jefferson Davis Hospital*	Houston Texas	H Harris	326	11 014	1	2	60
University of Virginia Hospital*[1]	Charlottesville Va	F D Woodward	1 100	5 615	1	3	60
Medical College of Virginia—Hospital Division*[1]	Richmond Va	P N Pastore	971	3 849			46 50
Gill Memorial Eye Ear and Throat Hospital	Roanoke Va	E G Gill	1 831	20 271	2	5	150
State of Wisconsin General Hospital*[1]	Madison Wis	W Nesbit	593		1	3	25
Milwaukee County Hospital*[1]	Milwaukee Wis	G D Straus	597	2 920		1	50

Numerical and other references will be found on page 462

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The following services are approved by the Council and the American Board of Pathology Services which have been evaluated on the basis of training in the two categories, pathologic anatomy and clinical pathology, are designated as follows: pathologic anatomy only—a clinical pathology only—c pathologic anatomy and clinical pathology—p Training in hospitals which are not so designated in this list will be evaluated by the Board on an individual basis (at the time of application for certification)

Hospitals 439 Assistant Residencies and Residencies, 1190

Name of Hospital	Location	Chief of Service	Total Number of Laboratory Examinations	Surgical Specimens	Number Examined Microscopically	Number of Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Year)	Beginning Stipend (Month)
UNITED STATES ARMY										
Letterman Army Hospital*	San Francisco Calif	K F Ernst	407 901	5 679	5 630	207			4p	
Fitzsimons Army Hospital*	Denver Colo	C J Farinacci	500 921	4,224	4,224	210	2	6	4p	
Army Institute of Pathology	Washington D C			30 682	42 213	1 153			1	
Army Medical Center*[27]	Washington D C	D M Kuhns	671 306	6 909	6 813	251	2	6	4p	
Brooke Army Medical Center*[28]	San Antonio Tex	C J Lind	868 699	7 500	7 500	337			4p	
Gorgas Hospital*	Ancon C Z	M W Elton	163 735	3 652	3 652	400	1	3	3	
UNITED STATES NAVY										
U S. Naval Hospital*	Oakland Calif	J L. Zundell	118,278	4 103	4 103	239		3	4p	
U S Naval Hospital*	San Diego Calif	W F Pierce	340 016	4 047	2 643	325	3	3	4p	
U S Naval Hospital*[1]	Bethesda Md	W M Silliphant	311 670	6 358	6 358	261	4	10	3	
U S. Naval Hospital*[1]	St Albans N Y	W O Umiker	181,598	2,203		168			4p	
U S Naval Hospital*	Philadelphia Pa	R H Walker	240 003	2 798	2 798	303			3	
UNITED STATES PUBLIC HEALTH SERVICE										
U S Public Health Service Hospital*[1]	New Orleans La	L L Swan	112,539	2 110	1 981	84	1	2	2p	
U S Public Health Service Hospital*[1]	Baltimore Md	C H Binford	177,231	3 138	3 138	139	1	3	4p	
National Institute of Health	Bethesda Md	R D Lillie	6 122	2 227	2 227	221	1	1	1a	
U S Public Health Service Hospital*[1]	Staten Island N Y	L H Sophian	210 340	3 779	3 779	119	1	3	3p	
U S Public Health Service Hospital*[1]	Seattle Wash	T L Perrin	87 777	2 681	2 125	125	1	2	2p	
VETERANS ADMINISTRATION										
Veterans Admin Hospital*[1]	Long Beach Calif	B E Konwaler	453 138	3 658	3 658	496	2	5	4p	
Veterans Admin Hospital*[1]	Los Angeles Calif	L Kaplan	777 084	5 457	5 457	653	3	8	4p	
Veterans Admin Hospital	San Francisco	H D Moon and J T Crane	203 486	3 392	2 940	144	1	3	3p	
Veterans Admin. Hospital	Fort Logan Colo	W B Doblin		1 060			2	2	1p	
Veterans Admin. Hospital*	Newington Conn	R. Yesner	126 000	1 813	1,555	95	1	1	1p	
Veterans Admin Hospital[1]	Washington D C	J S Howe	99 938	1 061	1 061	134		3	4p	
Veterans Admin Hospital	Coral Gables Fla	A Blumberg		1,371		193	2	4	3p	
Veterans Admin. Hospital*[1]	Chamblee Ga	C M Whorton	376,580	2 311		175	1	3	4p	
Veterans Admin Hospital	Hines Ill	W L. McNamara	976,227	5 172	5 172	642		1	3	
Veterans Admin Hospital[1]	Indianapolis, Ind	D Rosenbaum	130 748	1 880		159	1	1	2p	
Veterans Admin Hospital[1]	Des Moines Ia	K R Cross	143 710	2 140	2 140	165		3	3p	
Veterans Admin. Hospital[1]	Wadsworth Kans	M L Jones	203,218	2 921	2 116	300	1	3	4p	
Veterans Admin Hospital[1]	Louisville	H Gordon	232 274	3 510	3,501	174	2	4	3p	
Veterans Admin. Hospital	New Orleans	J Ziskind	19 803	2,339	2,339	136	1	3	3	
Veterans Admin Hospital[1]	Fort Howard Md	W B Van de Grift	84,535	833	818	126	1	2	2p	
Veterans Admin Hospital[1]	Boston (West Roxbury)	J D Houghton	186 077	1 751	1,599	157	2	2	2p	
Veterans Admin Hospital[1]	Framingham Mass	R Feinberg	179 956	2 739	2 717	153	2	3	3p	
Veterans Admin. Hospital	Minneapolis	D F Gleason	293 791	5 026	4 729	268	6	0	4p	
Veterans Admin. Hospital[1]	Jefferson Barracks Mo	F Leidler	163,527	3 198	2 132	220	2	4	4p	
Veterans Admin Hospital	Brooklyn	M Bovarnick		896	896	175	1	1	1p	
Veterans Admin. Hospital[1]	New York City	B S Gordon	535 944	4 796	4 796	403	1	5	4p	
Veterans Admin Hospital[1]	Oteen N C	O Kanner	273 633			121	1	1	1p	
Veterans Admin Hospital[1]	Cleveland Ohio	J R Kahn	211 269	3 995	3 906	219	2	5	4p	
Veterans Admin Hospital	Dayton Ohio	C Raven	268 339	2 030	1 975	279	1	2	3p	
Veterans Admin Hospital[1]	Aspinwall Pa	G Brilmyer	303 737	1 835	1 825	210		2	4p	
Veterans Admin Hospital[1]	Memphis Tenn	D J Creiner	284 154	4,575	4 129	265	1	4	4p	
Veterans Admin Hospital*	Nashville Tenn	S H Auerbach	161,888	1 700	1,520	123	1	2	2p	
Veterans Admin Hospital[1]	Dallas Tex	L Weiss	171,272	1,330	1,330	109	1	3	3p	
Veterans Admin Hospital*[1]	Houston Tex	B Halpert	168 796	1 958	1 728	228	1	3	4p	
Veterans Admin Hospital*[1]	McKinney Tex	O J Wollenman Jr	165 747	1 728	1 728	153	2	3	2p	
Veterans Admin Hospital*	Salt Lake City Utah	O N Rambo Jr	105 660	1 088	910	84	2	2	1p	
Veterans Admin. Hospital*[1]	Richmond Va	J R. Kriz	178 708	2,296	2 175	135	1	2	2p	
Veterans Admin Hospital[1]	Milwaukee Wis	J M Lubitz	293 901	2 562	2 277	299	3	3	4p	
NONFEDERAL										
Baptist Hospital[1]	Birmingham Ala	A E Casey	169 955	4,229	4 222	88	2	2	4p	150
Jefferson Hillman Hospital*[1]	Birmingham Ala	R D Baker	211 193	4 863	4 863	402	1	3	4p	50
Lloyd Noland Hospital*	Fairfield Ala	B F Mann Jr and J A Cunningham	140 639	2 097	2 086	79	1	1	1p	225
University Hospital*[1]	Little Rock Ark	A. Nettleship	13 641	6 488		330	2	3	3	75
Kern General Hospital[1]	Bakersfield Calif	R W Huntington	196 193	3 814	3,396	469		2	4	340
Herrick Memorial Hospital*[1]	Berkeley Calif	H R. Fishback	56 237	3,245	1 995	177	1	2	2p	100
Glendale Sanitarium and Hospital*[1]	Glendale Calif	A. F Brown	60 789	2,503	1 755	136	1	1	2p	181
Loma Linda Sanitarium and Hospital*[1]	Loma Linda Calif	C S Small	3 749	3 068		347		7	4p	13*
California Hospital*[1]	Los Angeles	A Wright	132 620	6 322	4,381	185	1	1	3p	200
Cedars of Lebanon Hospital*[1]	Los Angeles	N Friedman	185 995	6 477	6,298	252	3	3	3p	75
Children's Hospital*[1]	Los Angeles	R E. Knutti	109 129	685	610	177	2	2	1p	100
Hospital of the Good Samaritan*[1]	Los Angeles	L. J Tragerman	127 144	5 582	3 412	148	1	2	1p	150
Los Angeles County Hospital*[1]	Los Angeles	E M Butt	559 088	14,251	10 674	1 959	4	4	3p	165
Queen of Angels Hospital*[1]	Los Angeles	A. R. Camero	141 155	5 464	4 583	307	1	3	3p	100
White Memorial Hospital*[1]	Los Angeles	O B Pratt		4 942	3,500	150		4	4p	120
Highland Alameda County Hospital*[1]	Oakland Calif	R J Parsons		3,138	2 784	274	1	3	3	145
Permanente Foundation Hospital*[1]	Oakland Calif	M Friedman	166 666	5 714	4 021	201		2	8	175
Collis P and Howard Huntington Memorial Hospital*	Pasadena Calif	A G Foord	88 187	7 030	6 485	291		3	3	240
San Bernardino County Charity Hospital*	San Bernardino Calif	J D Kirshbaum	95 724	2,572	1 091	234	1	1	4p	170
Mercy Hospital*[1]	San Diego Calif	D A DeSanto	71 132	6 072	5 695	128	1	3	1	150
San Diego County General Hospital*[1]	San Diego Calif	K Fowler	143 311	1 076	864	268	1	3	4p	125
Franklin Hospital*[1]	San Francisco	J L. Carr	4,581	4,581	2 591	107	2	2	2p	100
French Hospital*[1]	San Francisco	G A. Watson	81 016	3 124	2 013	101	1	1	1	150
Mount Zion Hospital*[1]	San Francisco	G R Biskind	7 151	2 578	1 995	154	2	4	3p	75
St Luke's Hospital*[1]	San Francisco	M B Black	54,943	4 413	2 700	91	1	2	2p	150
Stanford University Hospitals*[1]	San Francisco	A J Cox	72 009	2 828	2 828	157	1	2	3	50
University of California Hospital*[1]	San Francisco	J F Rinehart		4 464	4 464	166		2	1	75
Santa Clara County Hospital*[1]	San Jose Calif	D J Stump	121,578	1 749	1 749	308	1	2	3p	235

Numerical and other references will be found on page 462

17 PATHOLOGY—Continued

Name of Hospital	Location	Chief of Service	Total Number of Laboratory Examinations	Surgical Specimens	Number Examined Microscopically	Number of Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Year)	Beginning Stipend (Month)
Santa Barbara Cottage Hospital*[1]	Santa Barbara Calif	E L Benjamin	54 066	2 981	2,503	84	2	6	3	100
Glockner Penrose Hospital*[1] [54]	Colorado Springs Colo	E F Geever	88 868	4 017	3 991	151	1	2	2p	125
Children's Hospital [1]	Denver	H D Palmer	105 834	1 953	1 938	114		1	3p	85
Presbyterian Hospital*[1]	Denver	A E Lubchenco	43 415	3 601	2 486	103	1	1	1a	65
St. Luke's Hospital*[1]	Denver	W C Black	81 482	6 896	5 009	147		1	3p	100
University of Colorado Medical Center										
Colorado General Hospital*[1]	Denver	J B McNaught	150 119	2 471	2 465	316	1	4	4p	95
Denver General Hospital*[1] [24]	Denver	E H Valentine	218 088	1 963	1 963	434	1	3	4p	75
Colorado State Hospital [1]	Pueblo Colo	M Gallavan	86 038	680		317	2	4	1	275
Bridgeport Hospital*[1]	Bridgeport, Conn	I B Akerson	96 241	2 574	2,574	136	1	1	3	100
Hartford Hospital*[1]	Hartford Conn	R E Kendall	157 446	9 824	9 159	623	1	3	3	50
St. Francis Hospital*	Hartford Conn	L. P Hastings	155 857	5 357	4 407	191	2	4	3	75
Middlesex Hospital*	Middletown Conn	C McLeod	78 999	2,565	2 165	136	1	1	1p	100
New Britain General Hospital*[1]	New Britain Conn	P D Rosahn	108 882	3,894	3 894	143	1	2	3	100
Grace-New Haven Community Hospital										
New Haven Unit (University Service)*[1]	New Haven Conn	H S N Greene	5,200	5,200	4 940	272	2	4	3	40
Hospital of St. Raphael*[1]	New Haven Conn	R R. Nesbit	437 353	3,235	2 679	76	1	2	2p	15
Norwalk Hospital*[1]	Norwalk Conn	R N Barnett	86 846	2,333	2 333	138	2	3	2p	155
Stamford Hospital*[1]	Stamford Conn	J G Snavely	156 085	2 685	2,347	158	2	2	3p	150
St. Mary's Hospital*[1]	Waterbury Conn	M E. Cox	163 212	4,374	3,385	103	1	2	2p	150
Waterbury Hospital*[1]	Waterbury Conn	J O Collins	127 364	3 543		190	1	2	2p	100
Delaware Hospital*[1]	Wilmington Del	J W Howard	142 253	4 978	4 978	210	3	3	3	130
Memorial Hospital*[1]	Wilmington Del	J W Abbiss	64 376	1 890		154	2	2	2	125
Children's Hospital	Washington D C	E C Rice	96 360	367	197	111	2	3	1	25
Doctors Hospital*[1]	Washington D C	O B Hunter	119 051	5 675	5 165	144	1	1	1	100
Gallinger Municipal Hospital*[1]	Washington D C	M W Alden	192,248	2 177	2 170	601	2	2	3	100
Garfield Memorial Hospital*[1]	Washington D C	F C Rice	02 662	3 319	1 835	251	2	2	3	75
Georgetown University Hospital*[1]	Washington D C	C Geschickter	210 682	3 489	3 489	478	6	10	3	75
George Washington University Hospital*[1]	Washington D C	T M Peery	213 079	5,219	5 010	227	2	4	3	130
Providence Hospital*[1]	Washington D C	H H. Leffler	131 735	3 383	3 132	193	1	1	3	75
Sibley Memorial Hospital*[1]	Washington D C	O B Hunter	123 690	5,330	4 690	195	1	1		100
St. Vincent's Hospital*[1]	Jacksonville Fla	N A. Murray	62 380	4 171	4 171	100	1	1	1	125
Jackson Memorial Hospital*[1]	Miami Fla	P R Rezek	190 252	6 351	4 863	793	1	3	3	60
Crawford W Long Memorial Hospital*[1]	Atlanta Ga	D Ayer	132 481	5 450	5 405	192	2	4	4p	75
Grady Memorial Hospital*[1]	Atlanta Ga	W H Sheldon	7 302	6 710		592	4	10	3	20
University Hospital*[1]	Augusta Ga	E R. Pund	127 091	5,286	3 998	167	1	1	3	40
Emory University Hospital*	Emory University Ga	A Golden	91 571	3 584	3,584	167	2	2	3	50
Alexian Brothers Hospital*	Chicago	J P Simonds	60,228	722	722	120	1	1	1p	125
Augustana Hospital*[1]	Chicago	G Milles	65 444	3 243	[illegible] 748	177	2	4	4p	15
Children's Memorial Hospital [1]	Chicago	J D Boggs	03 612	408	408	99		1	1	79
City of Chicago Municipal Tuberculosis Sanitarium	Chicago	J R Thompson	75,390	1,344	726	87			1	125
Cook County Hospital*[1]	Chicago	H Popper	371 967	9 325	9 005	1 371		5	4p	32
Englewood Hospital*[55]	Chicago	G T Rich	60,554	1 670	1 679	68	1	1	1p	150
Grant Hospital*[1]	Chicago	C C Mason	83 000	4 255	3,215	121	1	3	2p	150
Illinois Masonic Hospital*[1]	Chicago	L S King	70 300	2 306	2,245	180	2	4	3p	50
Mercy Hospital*[1]	Chicago	T D Stone	55 219	3,536	2 676	138	1	1	3	25
Michael Reese Hospital*[1]	Chicago	O Saphir	429 411	5 625	5 625	403	2	8	4p	50
Mount Sinai Hospital*[1]	Chicago	I Davidsohn	260 853	5,516	3 942	180	3	6	4p	50
Norwegian American Hospital*[1]	Chicago	A Learner	72 120	2,256	1 699	89	1	1	1p	150
Northwestern University Medical Center										
Passavant Memorial Hospital*	Chicago	M C Wheelock and W B Wartman	67 411	2,500	2 500	110	1	4	3	
Presbyterian Hospital*	Chicago	G M Hass	197 383	5,362	5 362	230	2	4	3	50
Provident Hospital*[1]	Chicago	J E Bowman	55,203	1 762	1 762	87	1	1	1	60
Ravenswood Hospital*[1]	Chicago	H I Brown	78 836	2 297	2,297	185	1	2	2p	75
Research and Educational Hospitals*[1]	Chicago	G A Bennett	201 000	4,248	4,248	197	1	4	4p	55
St. Luke's Hospital*[1]	Chicago	E F Hirsch	300 816	7,561	6 900	338	1	4	3	25
St. Mary of Nazareth Hospital*	Chicago	E Thurston	160 464	4,398	4 292	149	1	1	2a	100
University of Chicago Clinics*	Chicago	P R. Cannon	349 746	4 955	4 658	224	3	3	3	25
Wesley Memorial Hospital*[1]	Chicago	T C Laipply	196 160	4 483	4 483	221	2	4	4p	25
Evanston Hospital*[1]	Evanston Ill	H. G Davis	137,214	2 733	2 708	260	1	3	3	50
St. Francis Hospital*	Evanston Ill	J W Henry	114 757	5 026	3 692	169	1	3	3	150
Methodist Hospital of Central Illinois*[1]	Peoria, Ill.	D O Manshardt	60,313	5 100	3 661	85	1	1	2p	150
St. Francis Hospital*[1]	Peoria, Ill	J E Kraus	106 759	6 142	4 745	245		1	3	100
St. Anthony's Hospital*	Rockford Ill	A. R. K Matthews	87,367	3,525	3,395	188		1	3p	200
St. Joseph Hospital [1]	Fort Wayne Ind	S M Rabson	66 612	3 615	3 077	119	2	3	2p	155
Indianapolis General Hospital*[1]	Indianapolis	W Drake	130,288	2 469	2 403	287	1	3	3	100
Indiana University Medical Center*[1]	Indianapolis	F Forry and G L Arbogast	215 913	4,303	4,303	378	2	6	3	166
Methodist Hospital*[1]	Indianapolis	H M Banks	329 255	10 635	8,547	236	2	6	4p	260
St Elizabeth Hospital*[1]	La Fayette Ind	J M McFadden	101,278	2,671	2 466	94	1	3	3p	150
Ball Memorial Hospital*[1]	Muncie Ind	L G Montgomery	110,567	4,820	4 190	128	1	4	4p	150
Memorial Hospital*[1] [60]	South Bend Ind	A. S Giordano	36 699	1,877	1 657	130	2	4	3	250
Iowa Methodist Hospital*[1]	Des Moines Ia	R. F Birge	106,515	6,248	6 192	201	1	2	3	100
Mercy Hospital*[1]	Des Moines Ia	F C Coleman	96,571	2 624	2 624	152	1	3	3p	210
University Hospitals*[1]	Iowa City	E. D Warner	8,357	7 966	7 968	389	1	3	3	120
University of Kansas Medical Center*[1]	Kansas City Kans	H R. Wahl		7,219	6 069	640	1	4	3	100
St. Francis Hospital*[1]	Wichita, Kans	W P Callahan Jr	125 705	8,399	7,318	251	2	6	3	
Louisville General Hospital*[1]	Louisville Ky	A. J Miller	116 797	2 773	2 435	412	2	3	3	45
Charity Hospital of Louisiana*[1]	New Orleans	E Moss	687,302	14 983	14,983	1,395	3	12	4p	25
Hotel Dieu Sisters Hospital*[1]	New Orleans	R. M Hartwell	155,260	6 329	6,329	111	1	3	4p	100
Southern Baptist Hospital*[1]	New Orleans	E. H. Lawson	330 461	7,857		104	1	3	3p	125
Touro Infirmary*[1]	New Orleans	A J Hertzog	187 697	5 634	5 634	210	1	3	3	17
Shreveport Charity Hospital*[1]	Shreveport La	W R. Mathews	175 012	4 710	4 710	370		1	1	60
Eastern Maine General Hospital*[1]	Bangor Me	R Wadsworth	107 999	5,316	5 058	161	1	2	2p	60
Maine General Hospital*[1]	Portland Me	J E Porter	108 621	6,326	5,500	274	1	3	3	50
Baltimore City Hospitals*[1]	Baltimore	C G Warner	87 665	1 608	1,508	442	1	4	3	15
Johns Hopkins Hospital*	Baltimore	A R. Rich		5,235	5,235	506		4	3	41 60
Sinai Hospital*[1]	Baltimore	T Weinberg	182 442	4 950	4 959	153	2	4	4p	35
Union Memorial Hospital*[1]	Baltimore	W C Merkel	147 046	2,225	2 225	178	1	2	2p	40
University Hospital*[1]	Baltimore	H R Spencer	217,554	3 782	3 782	241		2	3a	
Memorial Hospital	Cumberland Md	B Skitarelic	100 150	2 944	2 944	121	1	2	2	100
Beverly Hospital*	Beverly Mass	D E Brown	81 114	1 400	1 409	114	1	1	3	50
Beth Israel Hospital*[1]	Boston	M J Schlesinger	113 436	3 440	3 449	148	1	3	3	41 65
Boston City Hospital*[1]	Boston	F Parker Jr	87 999	5 948	5 948	938	7	11	3	90
Boston Lying In Hospital [56]	Boston	A. T Hertig	8,275	1 904	1 904	78	1	2	1p	76
Carney Hospital*[1]	Boston	H E. MacMahon	83,657	2 146	2 146	77	1	1	1p	100
Children's Hospital*	Boston	S Farber	81 820	1 865	1 836	257		1		42
Massachusetts General Hospital*	Boston	T B Mallory	17 408	9 923	9 923	474	2	9	3	41 65
Massachusetts Memorial Hospital*	Boston	R. Osgood	142,835	2 485	2,475	123	1	3	3	60

Numerical and other references will be found on page 462.

17 PATHOLOGY—Continued

Name of Hospital	Location	Chief of Service	Total Number of Laboratory Examinations	Surgical Specimens	Number Examined Microscopically	Number of Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Year)	Beginning Stipend (Month)
New England Deaconess Hospital[1]	Boston	S Warren	164 705	7 777	7 777	249	6	6	3	125
Peter Bent Brigham Hospital*[1]	Boston	S P Hicks	2,543	2 289	2,289	254	3	1	3	83
St. Elizabeth s Hospital*	Boston	J Graham	75 156	2 991	2 793	116	1	1	1	125
Cambridge City Hospital*[1]	Cambridge Mass	R Z Schulz	66 840	1 184	1 184	140	1	1	1	125
Mount Auburn Hospital*[1]	Cambridge, Mass	H E MacMahon	92 862	2 619	2 619	132	1	1	1	125
Burbank Hospital*[1]	Fitchburg Mass	H J Sparling Jr	60 000	1,396	1 396	96	1	1	1^p	200
Framingham Union Hospital	Framingham Mass	C B Tedeschi	40 773	2 762	2 210	35		1	1^p	
Holyoke Hospital*[19]	Holyoke Mass	J S Grewal	46 632	1 137	797	45	1	2	2^p	100
Lawrence General Hospital*[1]	Lawrence Mass	L S Jolliffe	73 676	1 549	1,549	132	1	3	1^a	100
Lynn Hospital*[1]	Lynn Mass	H Olken	99 025	2 007	2 007	136	1	1	1^a	
Malden Hospital	Malden Mass	M V Mackenzie	64,268	2 142	2 142	77	1	1	2^a	100
St. Luke s Hospital*	New Bedford Mass	V Kiarsis	139 455	3 744	2,566	125	1	1	2^p	200
Newton Wellesley Hospital*[1]	Newton Lower Falls Mass	D Skinner	84 913	2 739	2,289	109	1	2	2^p	100
Quincy City Hospital*	Quincy, Mass	O J Pollak	105 753	2 131	2 131	141	3	3	2^p	125
Salem Hospital*[1]	Salem Mass	D A Nickerson	94 776	1,855	1 855	128	2	4	3	85
Pondville Hospital	Walpole Mass	S Warren	35 936	1,539	1 539	38	1	1	1	365
Memorial Hospital*[1]	Worcester Mass	R C Sniffen	50,357	2,201	2 096	95	1	1	1^a	125
Worcester City Hospital*[1]	Worcester Mass	F K Fite	120 459	3 007	2 855	307	3	3	4^p	100
Worcester State Hospital[1]	Worcester Mass	W W Jetter and A E Scheflen	629	14	14	80			3	
University Hospital*[1]	Ann Arbor Mich	C V Weller	178 929	8 768		487	1	2	3	124
Leila Y Post Montgomery Hospital*[1]	Battle Creek Mich	A A Humphrey	56 990	2 324	2,324	120	1	1	1	
Wayne University Affiliated Hospitals										
Veterans Admin Hospital	Dearborn Mich	J L. Chason	251 879	3,284	3 284	253		3	2^p	n
City of Detroit Receiving Hospital*[1]	Detroit	O A. Brines	250 250	4 074	4 074	559	2	8	4^p	217
Herman Kiefer Hospital*[1]	Detroit	P C Martineau	613 405	736	736	195	1	1	1	250
Detroit Memorial Hospital*	Detroit								3	
Grace Hospital*	Detroit	C I Owen	211 876	15 934	15 934	332	1	1	3	225
Harper Hospital*[1]	Detroit	P F Morse	224 417	6 836	6 836	266	1	3	4^p	205
Henry Ford Hospital*[1]	Detroit	F W Hartman	405 059	8 134	8 134	340	1	6	4^p	225
Mount Carmel Hospital*[1]	Detroit	L W Gardner		6 541		158	1	3	4^p	125
Providence Hospital*[1]	Detroit	D H Kaump	115 959	4 394	4 394	302	1	3	3	200
Woman s Hospital*[1]	Detroit	D Beaver					1	1	1	180
Wayne County General Hospital and Infirmary*[1]	Eloise Mich	S E Gould	224,25[illegible]	3 675	3 675	455	1	2	3	252 33
Hurley Hospital*	Flint Mich	G R Backus and R J Jermstad		9 384	3 871		1	1	4^p	164
Blodgett Memorial Hospital*[1]	Grand Rapids Mich	C A Payne	85 748	2,576		148	1	1	2^p	200
Butterworth Hospital*[1]	Grand Rapids Mich	P A. VanPernis	115 406	6,249	5 045	208	1	4	4^p	125
Edward W Sparrow Hospital*[1]	Lansing Mich	C E Black	80 817	3,373	3,373	167	1	2	3^p	325
Saginaw General Hospital*[1]	Saginaw Mich	R V Bucklin	75,840	4 721	2 334	140	1	1	2^p	300
St Mary s Hospital*[1]	Duluth Minn	W V Knoll	228,351	3 005		228	1	1	1	200
Minneapolis General Hospital*[1]	Minneapolis	J I Coe	344 009	2 079	1 826	290	1	1	3	125
Northwestern Hospital*[1]	Minneapolis	S N Lofsness	78 015	4 654	3,264	151	2	2	3	175
St Barnabas Hospital*[1]	Minneapolis	N E Lufkin	86 410	2 954	2 432	151	1	2	2^p	
Swedish Hospital*[1]	Minneapolis	A. R Jay	90 282	4 056		182	1	1	3^p	158
University of Minnesota Hospitals*[1]	Minneapolis			5,234		347			4^p	
Mayo Foundation	Rochester Minn						6	18	3	135
Ancker Hospital*[1]	St Paul	J F Noble	150 788	1 663	1 663	431	1	2	1	91 50
Charles T Miller Hospital*[1]	St Paul	K Ikeda	116 883	4 235	3 973	112		1	3	115
St. Louis County Hospital*[1]	Clayton Mo	W G Brown	93 033	1 657	1,238	214	1	2	3	95
Kansas City General Hospital No. 1*	Kansas City Mo	V B Buhler	503 041	2 499	2 070	489	1	3	3^p	75
Menorah Hospital Medical Center*	Kansas City Mo		74 627	2,592	1 675	111			1^p	
Research Hospital*[1]	Kansas City Mo	H K B Alleback	165 165	4 790	4 645	149	1	2	3	150
St Joseph Hospital*	Kansas City Mo	R W Kerr	173,203	6 744	4 450	221			3	
St. Luke s Hospital*[1]	Kansas City Mo	F C Helwig	106 825	9 358	7,830	201	1	3	4^p	150
Barnes Hospital*[1]	St Louis	G Dammin		8 149	8 149	513	3	11	3	
Homer G Phillips Hospital*[1]	St. Louis	J A. Saxton	172 130	2 012	1,870	183	1	2	1	132
Jewish Hospital*[1]	St Louis	H T Blumenthal	218 449	2,831	2 831	146		1	4^p	100
Missouri Baptist Hospital*[1]	St. Louis	H R Wood	116 702	6 987	3,370	96			2^p	90
St Louis City Hospital*[1]	St Louis	J Saxton	22[illegible] 653	3 935		467	2	3	3	123 80
St Mary s Group of Hospitals*[1]	St. Louis	H Pinkerton	590 062	8 076	5 782	270	1	3	3	35
Montana Deaconess Hospital*	Great Falls Mont	E Hildebrand	59 064					2	2^p	
Lincoln General Hospital*[57]	Lincoln, Nebr	F H Tanner	59 395	3,509	3,396	134	1	1	1	75
Creighton Memorial St. Joseph s Hospital*[1]	Omaha	B C Russum	164 310	21,502	20 832	141	1	3	4^p	100
Nebraska Methodist Hospital*[1]	Omaha	J Schenken	50 913	4 309	4,309	101		1	4^p	125
University of Nebraska Hospital*[1]	Omaha	J P Tollman	85,386	1 884	1 884	107	1	3	3	125
Mary Hitchcock Memorial Hospital*[1]	Hanover N H	R E. Miller	134,326	4,233	3 918	114	1	4	3	163
Elliot Hospital	Manchester N H.	S M Brooks	36 693	3,203	2 477	94	1	1	1^a	200
Atlantic City Hospital*[1]	Atlantic City N J	M Ackerman	49 552	2 360	2 360	188	1	1	3^p	150
Cooper Hospital*[1]	Camden N J	W T Read Jr	160,249	3 007	2 952	221	1	1	3	83 33
West Jersey Hospital*[1]	Camden, N J	W R Platt	141 326	2 106	2 106	170	1	3	4^p	125
Jersey City Hospital*[1]	Jersey City N J	A. Cnassi	322 144	5 853	5,853	305	2	3	1	35
Monmouth Memorial Hospital*[1]	Long Branch N J	A. Yaguda	67 420	1 702	1 702	115	1	1	3^p	200
Mountainside Hospital*[1]	Montclair N J	J L. Work	116 086	4,211	4 060	128	1	1	3^p	100 74
Burlington County Hospital[1]	Mount Holly N J	J T Bauer	22 507	869	869	86	1	1	1^a	100
Hospital of St Barnabas and For Women and Children*[1]	Newark N J	W G Bernhard	77 608	2 844	2 114	87	1	2	2^p	100
Newark Beth Israel Hospital*	Newark N J	L. M Goldman	76 63[illegible]	5 140	4 581	178	1	2	3	50
Newark City Hospital*[1]	Newark N J	H. S Martland	105 503	1 416		353	1	2	3^p	100
Presbyterian Hospital[1]	Newark N J	S A. Goldberg	95 848	4 659	4 553	152	2	2	1^p	75
St Michael s Hospital*	Newark N J	S J Rose	119 874	3 952	3 952	173	2	2	2^p	100
Orange Memorial Hospital*[1]	Orange N J	A R Abel	88 168	4 923	2 644	184	1	1	2^p	100
Passaic General Hospital*	Passaic N J	J R Gannon	70 551	2 549	2 195	104	1	1	3^p	120
Paterson General Hospital*	Paterson, N J	A H Davis	67 080	11 300	4 928	456	2	4	2^p	100
Muhlenberg Hospital*[1]	Plainfield N J	C G Darlington and H. Hanson	71 791	2 723	2 586	100	1	1	1^p	200
Mercer Hospital*[1]	Trenton N J	T K. Rathmell	85 551	1,545	1 541	128	1	2	2^p	150
Albany Hospital*[1]	Albany N Y	A W Wright	8 820	7 007	7 007	363		4	3	50
Bender Hygienic Laboratory	Albany N Y	J J Clemmer	318 393	10 320	10 320	244	2	4	3	200
Binghamton City Hospital*[1]	Binghamton N Y	V W Bergstrom	140 198	3 489	3 473	201	1	2	3	130 50
Beth El Hospital*[1]	Brooklyn	P Gruenwald	181 307	3,522	3,522	87	2	3	4^p	100
Brooklyn Hospital*[1]	Brooklyn	J A DeVeer	34 194	3 997	3 997	102	1	3	3	25
Coney Island Hospital*[1]	Brooklyn	H Fink	179 052	2,329		141	3	3	3^p	90
Cumberland Hospital*[1]	Brooklyn	S H Polayes	110,286	2 720		200	2	3	4^p	60
Greenpoint Hospital*[1]	Brooklyn	R Aronoff	160 957	9 477	9 477	159	1	3	4^p	140
Jewish Hospital*[1]	Brooklyn	D M Brayzel	288 922	6 433	5,302	215	3	6	3	50
Kings County Hospital*[1]	Brooklyn	C G Burn	586 391	12 116	12 116	1 092	5	5	3	
Long Island College Hospital*[1]	Brooklyn	T G Morrione	145 659	3 196		134	2	3	3	25
Maimonides Hospital*[1]	Brooklyn	A R Kantrowitz	250 131	3 622	3 623	121	2	3	3	75
Methodist Hospital*[1]	Brooklyn	B S Herr Jr	105 078	3 494	3 484	150	1	1	3^p	25

Numerical and other references will be found on page 462

17 PATHOLOGY—Continued

Name of Hospital	Location	Chief of Service	Total Number of Laboratory Examinations	Surgical Specimens	Number Examined Microscopically	Number of Autopsies	First Year Residences Offered	Total Residences Offered	Length of Approved Program (Year)	Beginning Stipend (Month)
Norwegian Lutheran Deaconesses Home and Hospital*	Brooklyn								1p	
St. John's Episcopal Hospital*¹	Brooklyn	R Gettinger	1 747	1 631	1 631	48			1	
Buffalo General Hospital*	Buffalo	K L Terplan	5 224	4 926	4 926	298	2	2	3	25
Deaconess Hospital*	Buffalo	S Tannhauser	87 150	8,574	7 133	95	1	1	3p	
Edward J Meyer Memorial Hospital*¹	Buffalo	S Sanes	179 032	3 451	2 528	327	1	3	3	100
Millard Fillmore Hospital*¹	Buffalo	A V Postoloff	246 878	5 784	5 784	307	1	3	3	50
Flushing Hospital and Dispensary*¹	Flushing N Y	J Werne	80 672	2 742	2 032	127	1	1	3p	100
Meadowbrook Hospital	Hempstead N Y	T J Curphey	134 135	1 892	1,892	440	4	4	1	135
Mary Immaculate Hospital*¹	Jamaica N Y	M Bevilacqua	109 728	2 494		87	2	2	4p	110
Queens General Hospital*¹	Jamaica N Y	A Angrist	581 437	3 911	3 751	700	5	7	3	80
Charles S Wilson Memorial Hospital*¹	Johnson City N Y	A Kosinski	175 620	3 530	3 530	159	1	3	4p	150
St John's Long Island City Hospital*¹	Long Island City N Y	J Werne	36 229	895	853	261		2	3*1p	50
Nassau Hospital*¹	Mineola N Y	F A. Inda	58 807	3 806	3 266	93	1	1	2p	110
Mount Vernon Hospital*¹	Mount Vernon N Y	J G Sharnoff	85 650	3 495	3 495	128	1	2	1p	125
New Rochelle Hospital*	New Rochelle N Y	W C Schraft	90 831	2 960	2 960	125	1	1	1p	125
Bellevue Hospital Div IV New York University*¹	New York City	S L Wilens	1 143,230	6 838	6 838	688	2	4	4p	60
Beth Israel Hospital*¹	New York City	W Antopol	145 120	3 799	3 799	123	2	5	3	50
Bronx Hospital*¹	New York City	J Felsen	98 990	5 473		73	1	2	3	75
Doctor's Hospital ¹	New York City	J R. Lisa	2 032	3 640	3 600	85	1	1	1p	200
Flower and Fifth Avenue Hospitals*¹	New York City	F D Speer	145 949	5 113	4 549	139	3	3	3	
Fordham Hospital*¹	New York City	L J Millman	14 566	1,540	1 498	305	2	3	1	80
*Goldwater Memorial Hospital*¹*	*New York City*	*J Rosenthal*	*138 901*	*2 689*	*705*	*167*	2	3	3	80
Harlem Hospital*	New York City	S Weintraub	354 626	8 428	8 428	358	2	2	1	80
Hospital for Joint Diseases*¹	New York City	H L Jaffe	87 820	2 681	2 681	38	2	2	1p	40
Jewish Memorial Hospital*	New York City	A Angrist	86 450	2 189		73	1	1	1	100
Lebanon Hospital*¹	New York City	J C Ehrlich	83 580	3 235	3 235	95	2	2	2p	100
Lenox Hill Hospital*¹	New York City	G L Rohdenburg	93 776	5 118	5 118	125	1	1	3	50
Lincoln Hospital*¹	New York City	C R. Brown	116 511	2 404	2 404	172		2	3	60
Memorial Hospital ¹	New York City	F W Stewart	107 224	19 252	19 252	212		14	2*	300
Metropolitan Hospital*¹	New York City	A. Saccone	264 407	2 063	2 036	228	1	2	1	80
Montefiore Hospital for Chronic Diseases*¹	New York City	H M Zimmerman	84 810	2 261	2,261	363	1	2	3	60
Morrisania City Hospital*¹	New York City	W Aronson	206 236	4,350	2 415	300	1	2	4p	80
Mount Sinai Hospital*¹	New York City	P Klemperer	268 150	8 171	8 171	322	7	7	3	50
New York City Hospital*¹	New York City	J R Lisa	12 632	2 326	2 044	237	1	2	3	80
New York Hospital*¹	New York City	J G Kidd	441 054	8 202	7,384	416	2	6	2	25
New York Polyclinic Hospital*¹	New York City	S A Gladstone	66 544	3 874	3 874	93	1	2	2p	75
Presbyterian Hospital*¹	New York City	H P Smith		7 964	7 936	415	2	2	3	225
*Roosevelt Hospital*¹*	*New York City*	W W Brandes	*182 038*	*3 425*	*3 425*	*150*	2	2	1	
St. Barnabas Hospital for Chronic Diseases ¹ ⁵⁸	New York City	H K Russell	20 121	1,233		71	1	2	2p	100
St Clare's Hospital*	New York City	J M Ravid		2 895	2 895	118	1	2	2p	25
St. Luke's Hospital*¹	New York City	B E Clarke	164 936	3 399	3,399	230	1	3	4p	60
St. Vincent's Hospital*¹	New York City	A Rottino	93 685	3 661	3 661	332	1	2	4p	50
Sydenham Hospital*¹	New York City	I H Feigin	95 158	1 673	1 673	62	1	1	1	140
University Hospital*¹	New York City	M N Richter	25 671	5 931	5 605	89	1	4	3	60
Willard Parker Hospital ¹	New York City	V B Dolgopol	91 351	182	182	28	1	1	1	130
United Hospital*¹	Port Chester N Y	M Loder	72 215	2 164	2 050	68	1	1	1p	150
*Rochester General Hospital*¹*	Rochester N Y	M G Bohrod	122 531		7 291	279	3	9	4p	65
St. Mary's Hospital*¹	Rochester N Y	J Adler	134 272	3 945	3,534	227	2	6	1	125
Strong Memorial Rochester Municipal Hospitals*¹	Rochester N Y	G H Whipple		4 452	4 452	678	4	6	3	41 66
Ellis Hospital*¹	*Schenectady N Y*	*E Kellert*	*212 887*	*6 124*	*6 124*	258	1	1	3	125
State University Medical Center ⁵⁹	Syracuse								3	
Samaritan Hospital*¹	Troy N Y	A H Mercer	46 223	2 032	1 737	95	1	1	1	125
*Grasslands Hospital*¹*	*Valhalla N Y*	D M Spain	140 013	1 483	1 493	237	2	3	3	125
*Charlotte Memorial Hospital*¹*	*Charlotte N C*	*P Kimmelstiel*	*142 683*	7 413	7,200	191	1	3	3	100
Duke Hospital*¹	Durham N C	W D Forbus	493 451	10 335	10 335	355	1	5	3	
Watts Hospital*¹	Durham N C	J U Gunter	127 217	3 938	3 746	77		1	2	50
North Carolina Baptist Hospital*¹	Winston Salem N C	R P Morehead	255 348	25 610	25 010	279	2	5	3	41 66
City Hospital*¹	Akron Ohio	L Catron	203 200	5 989	5 989	223	1	3	3	140
*Peoples Hospital*¹*	Akron Ohio	G R *Dochat*	158 479	4,325	3 837	123	1	3	3p	100
Aultman Hospital*¹	Canton Ohio	D G Henderson	213 003	2,577		221	2	2	1	125
Bethesda Hospital*¹	Cincinnati	D G Freiman	40 627	4 187	2 531	150	1	2	2*	150
*Christ Hospital**	Cincinnati	J W Leighliter	150 601	3 769	3 632	148	1	1	1	125
Cincinnati General Hospital*¹	Cincinnati	E Gall	120 638	3 393	3 356	646	3	6	4p	
Good Samaritan Hospital*¹	Cincinnati	W McK German	142 037	8 043	7 779	207	1	3	3	155
*Jewish Hospital*¹*	Cincinnati	P *Wasserman*	151 142	4 910	4 583	199	1	1	4p	60
City Hospital*¹	Cleveland	T D Kinney	275 344	2 700	2 700	607	6	9	3	67
Cleveland Clinic Hospital ¹	Cleveland	J B Hazard	442 968	5 406	5 403	176	1	6	4p	
*Mount Sinai Hospital*¹*	Cleveland	B S Kline		4 108	4 108	181	1	3	2	100
St. Luke's Hospital*¹	Cleveland	R *Dominguez*	199 430	4 875	4 600	185	*1*	*4*	4p	*100*
St. Vincent Charity Hospital*¹	Cleveland	P W Graff	98 048	2 785		99	2	2	3	75
*University Hospital*¹*	Cleveland	A R Moritz	323 409		2 427	393	2	6	3	
Grant Hospital	Columbus Ohio	W H Benham	58 237	3 765	3 765	126	1	1	1	200
Ohio State University Hospital*¹	Columbus Ohio	E Von Haam	207 496	6 896	6 396	280	2	4	4p	50
*White Cross Hospital*¹*	Columbus Ohio	R S Fidler		10 692		150	1	2	4p	100
Miami Valley Hospital*¹	Dayton Ohio	M Oosting	210 119	9,264	9,264	*324*	*1*	*3*	4p	75
Huron Road Hospital*¹	East Cleveland Ohio	E Goodsitt	131 370	4 377	4 377	144	1	*1*	4p	150
Mercy Hospital*	Hamilton, Ohio	K E Lande	82 813	1 139	1 139	102	1	1	1p	100
St Rita's Hospital*¹	Lima Ohio	C L Blumstein	116 810	3 178	2 412	143	*1*	*1*	1p	*100*
Springfield City Hospital*¹	Springfield Ohio	M P Hunter	80 312	3 435	2 931	197	1	1	1*	225
Mercy Hospital*¹	Toledo Ohio	F L Burns	134 602	5 414	4 710	101	1	3	3	
St Vincent's Hospital*¹	Toledo Ohio	M F Vidoli	97 374	4 448		140	1	1	3p	125
Toledo Hospital*¹	Toledo Ohio	B Steinberg	104 772	3 765	3 493	206	1	3	4p	125
Youngstown Hospital*¹	Youngstown Ohio	A E Rappoport	231 967	6 288	6 288	462	1	4	4p	125
University Hospitals*¹	Oklahoma City	H C Hoppe	186 848	3 196	3 052	186	5	5	3	50
Hillcrest Memorial Hospital*	Tulsa Okla	L Lowbeer	61 933	4 109	2 809	123	1	1	1	75
*Emanuel Hospital*¹*	Portland Ore	H H Foskett	184 926	7 431		217	1	1	1	85
Good Samaritan Hospital*¹	Portland Ore	W L. *Lehman*	*164 771*	*4 172*	3 080	235	2	2	4p	145
Providence Hospital*¹	Portland Ore	J Minckler	62 584	4 349	3,368	216	1	2	2	75
St. Vincent's Hospital*¹	Portland Ore	F R Menne	180 052	6 844	6 484	179	1	1	4p	75
University of Oregon Medical School Hospitals and Clinics*¹	Portland Ore	W C Hunter	208 206	3 602	3 602	844	2	8	3	85
Abington Memorial Hospital*¹	Abington Pa	J Eiman	109 620	3 595	3 544	188	2	3	4p	75
Allentown Hospital*¹	Allentown Pa	J J Wenner	191,381	3,235	3 133	239	1	1	3	100
Sacred Heart Hospital*¹	Allentown Pa	D E Stader	123 812	4 923	4 923	127	1	1	1p	150
St Luke's Hospital*	Bethlehem Pa	T A Cope Jr	101 153	2 564	2 179	226	1	2	3p	100
Bryn Mawr Hospital*	Bryn Mawr Pa	M M Strumia	*218 378*	*4 060*	3 768	182	1	2	4p	75
George F Geisinger Memorial Hospital*¹	Danville, Pa	H F Hunt	94 352	2,830	2 740	109	1	1	1	100
Fitzgerald Mercy *Hospital**	Darby, Pa	A Valdes Dapena	106 814	1 992	1 992	113	1	1	3p	100
Hamot Hospital*¹	Erie Pa	E L Armstrong	*138 443*	4 554	4 554	141	4	4	4p	150
Lancaster General Hospital*¹	Lancaster Pa		102 988	2 395	2,295	201	1	1	1p	

Numerical and other references will be found on page 462

17 PATHOLOGY—Continued

Name of Hospital	Location	Chief of Service	Total Number of Laboratory Examinations	Surgical Specimens	Number Examined Microscopically	Number of Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Year)	Beginning Stipend (Month)
St Joseph's Hospital*	Lancaster Pa	E E Ziegler	95 139	4 354		129	1	2	2^p	
Episcopal Hospital*[1]	Philadelphia	W P Belk	125 912	1 854		132	1	1	3^p	50
Frankford Hospital*[1]	Philadelphia	W L. C Spaeth	40,510	1,591	1,591	126	1	1	2	200
Germantown Dispensary and Hospital*[1]	Philadelphia	F B Lynch Jr	100 012	2,351	1,810	146	1	3	4^p	50
Graduate Hospital of the Univ of Pennsylvania*[1]	Philadelphia	A Valdes Dapena	792 008	2 834	2 834	121	3	3	3	
Hahnemann Hospital*[1]	Philadelphia	J E. Gregory		4 758	4 758	321	2	6	4^p	50
Hospital of the University of Pennsylvania*[1]	Philadelphia	B Lucke	407 783	7 753	7 753	444	4	12	3	
Hospital of the Woman's Medical College of Pennsylvania*[1]	Philadelphia	M A Geiss	1,564	26		41			2^p	
Jefferson Medical College Hospital*	Philadelphia	C J Bucher	319 770	9 805	9 805	322	2	2	3	
Jewish Hospital*[1]	Philadelphia	H Brody	147 960	3 706	3 106	146	2	2	1	50
Lankenau Hospital*[1] [16]	Philadelphia	C E Brown	149 424	2 792		137			4^p	
Mount Sinai Hospital*[1]	Philadelphia	D R Meranze	138 494	3 983	3 983	178	4	4	4^p	50
Pennsylvania Hospital*	Philadelphia		302 905	4 901		206	5	5	4^p	20
Philadelphia General Hospital*[1]	Philadelphia	J H Clark	463 970	4 805	4 493	1,325	3	6	3	75
Presbyterian Hospital*[1]	Philadelphia	R P Custer	129 772	2 938	2 938	190			4^p	25
Temple University Hospital*[1]	Philadelphia	E E Aegerter	432 039	6 974	6 974	286		4	3	
Allegheny General Hospital*[1]	Pittsburgh	R C Grauer	129,339	3,311	3 311	110		1	3	100
Children's Hospital	Pittsburgh	M L. Menten	89 835	427	413	105	1	3	1	41 66
Mercy Hospital*[1]	Pittsburgh	H H Permar	156 774	5 377	5 109	158			4^p	100
Montefiore Hospital*[1]	Pittsburgh	K Yardumian	85 430	3 640	3 000	150	2	2	3^p	50
Presbyterian Hospital*[1]	Pittsburgh	E L. Heller		2 748	2 281	102			3	41 66
St Francis Hospital*[1]	Pittsburgh		156 339	2 421	2,305	127			3	
Western Pennsylvania Hospital*[1]	Pittsburgh	A Graham	153 859	3 738	3 738	124	1	1	3^p	100
Reading Hospital*[1]	Reading Pa	W P Jennings	120 055	3 031	3 009	263		2	3	125
Robert Packer Hospital*[1]	Sayre Pa		177 744	2 703		192		2	3^p	150
Scranton State Hospital*	Scranton Pa	E P Swartz	119 538	1 938	1 938	108	1	1	2^p	212
Williamsport Hospital*[1]	Williamsport Pa	M G Colvin	116 919	4 021	3 148	146	1	2	3	100
York Hospital*[1]	York, Pa	L. C Pusch	94,521	2 171	2 171	135	1	1	3^p	100
Rhode Island Hospital*[1]	Providence R I.	H Fanger	186 539	9 255	9 255	488	2	5	3^p	60
Roper Hospital*[1] [25]	Charleston S C	K M Lynch	120 818	4 317	3 577	253	2	6	3	150
Baroness Erlanger Hospital*[1]	Chattanooga Tenn	J Adams	291 033	8 137	8 110	161	2	3	4^p	75
Baptist Memorial Hospital*[1]	Memphis	M L Trumbull	99 005	8 523	7 973	230		1	2	75
John Gaston Hospital*	Memphis		99 603	4 135		820		4	4^p	
Methodist Hospital*[1]	Memphis	W W Tribby	164 937	5 962	5 932	94	2	3	4^p	75
St Joseph Hospital*[1]	Memphis	W W Hurteau	12 947	6 029	4 031	126	3	5	3^a	
George W Hubbard Hospital of Meharry Medical College*[1]	Nashville	J R Cuff	2 312	2,312	2,312	127			2^p	
Nashville General Hospital*[1]	Nashville	W A DeMunbreun	10 728	1 476	1 350	104	1	3	3^p	100
Vanderbilt University Hospital*	Nashville	E W Goodpasture		4 119	4 072	187			3	
Brackenridge Hospital*[1]	Austin Tex	S W Bohls	71 338	1 912	1,646	79			2^p	
Baylor University Hospital*[1]	Dallas Tex	J M Hill		11 167			3	6	3	50
Parkland Hospital*[1]	Dallas Tex	E E Muirhead	269 497	2 899		242	1	3	3	
St Paul's Hospital*[1]	Dallas Tex	J L. Goforth	131 048	4 696	3 891	106	2	5	4^p	100
University of Texas Medical Branch Hospitals*[1] John Sealy Hospital	Galveston Tex	P Brindley	162 574	4 961	4,573	347	2	9	3	75
Hermann Hospital*[1]	Houston Tex	V H Keiller	213 470	6 141	6 134	215	1	3	4	75
Jefferson Davis Hospital*	Houston Tex	S A Wallace	261 897	8 718		430	1	4	3	50
M D Anderson Hospital for Cancer Research[1]	Houston Tex	W O Russell	52 077	2 556	2,556	199	2	6	2^p	150
St. Joseph's Infirmary*	Houston Tex	P M Marcuse	213 585	7 289	5 104	170	1	1	2^a	150
Baptist Memorial Hospital*[1]	San Antonio Tex		145,586	5 233	4 807	153			2^p	
Santa Rosa Hospital*	San Antonio Tex	J M Moore	138 391	8 732	3 992	90	2	2	3	200
St Benedict's Hospital*	Ogden Utah	R C Ellis		1 494	1,390	55	1	1	1^p	100
Dr W H Groves Latter Day Saints Hospital*[1]	Salt Lake City	J H Carlquist	65 175	5 652	3 309	138	1	1	1^a	125
Holy Cross Hospital*[1]	Salt Lake City	C McNeil	74 948	5 918		68	1	2	1^p	75
Salt Lake County General Hospital*[1]	Salt Lake City	F D Cunn		1 605	1,573	218		2	3	50
Mary Fletcher Hospital*[1]	Burlington Vt	E Woll	47 215	2 300	2 300	93	1	2	3	50
University of Virginia Hospital*[1]	Charlottesville Va	J R Cash and W E Bray Sr	151 031	15 131	15 131	297	2	6	3	125
Memorial Hospital	Danville Va	T J Moran		2 465			2	2	2^p	150
De Paul Hospital*	Norfolk Va	A F Strauss	114 955	6,254	4 916	214	1	3	3	
Norfolk General Hospital*[1]	Norfolk Va	A J Rawson and E O Levy	137 928	5 373		167	1	3	3	125
Medical College of Virginia—Hospital Division*[1] [32]	Richmond Va	F Apperly	323,286	9,242	9,242	442		5	3	46 50
King County Hospital Unit No. 1 (Harborview)*[1]	Seattle Wash	C R Jensen	180 528	2 466	3,292	588		1	3	100
Providence Hospital*[1]	Seattle Wash	D G Mason	113 378	5 004	3,254	196	1	1	1^a	110
Swedish Hospital*[1]	Seattle Wash	P Lund	152 908	5 866		189	1	1	1	100
Deaconess Hospital*[1]	Spokane Wash	T E. Ludden	100 691	4,559	3 021	188	1	1	3	150
St Luke's Hospital*[1]	Spokane Wash	O O Christianson	133 017	3 907		147	1	1	2^p	125
St Joseph's Hospital*	Tacoma Wash			4 684	4 677	135	1	1	2	200
Tacoma General Hospital*	Tacoma, Wash	C P Larson		6 802	6 450	318	2	5	3^p	150
Charleston General Hospital*[1]	Charleston W Va	W Putschar	58 696	2,284	2,252	148	1	1	3	125
State of Wisconsin General Hospital*[1]	Madison Wis	D M Angevine and W D Stovall	293,588	4 464	4,314	257	1	4	3	25
Columbia Hospital*	Milwaukee	G Ritchie	57 037	2 602	1 603	98	1	1	3	75
Milwaukee County Hospital*[1]	Milwaukee	J F Kuzma	219 133	3 404	3,237	628	1	4	4^p	50
St. Joseph's Hospital*	Milwaukee	W A. D Anderson	69 051	3,840	2 845	181	1	4	4^p	75
St Mary's Hospital*	Milwaukee	S B Pessin	71,807	4 789	2 281	130		2	3^p	100
Queen's Hospital*[1]	Honolulu T H	S Price	136 691	4 875	4,369	237	1	3	3	100

18 PEDIATRICS

The following services are approved by the Council and the American Board of Pediatrics

Hospitals 239 Assistant Residencies and Residencies, 1267

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY										
Letterman Army Hospital*	San Francisco Calif	C L. Milburn	859	8 008	17	14			2	
Fitzsimons Army Hospital*	Denver Colo	W W Currence	367	23 186	4	3	2	3	2	
Army Medical Center*[27]	Washington D C	O C Bruton	1 727	31 826	40	39	1	2	2	
Brooke Army Medical Center*[28]	San Antonio Tex	L. J Geppert	3 718	16 463	59	59			2	

Numerical and other references will be found on page 462.

18 PEDIATRICS—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered	Total Residencies Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES NAVY										
U S. Naval Hospital★	Oakland Calif	M Kurzrok	140	12 816	10	0			1	
U S Naval Hospital★[1]	Bethesda Md	J S Winter	911	1 004	37	35	2	3	2	
U S Naval Hospital★[1]	Chelsea Mass	D W Sherwood	400	7 628	38	30	2	3	[illegible]	
U S Naval Hospital★	Philadelphia	J F Shaul	659	9 773	0	0			[illegible]	
FEDERAL SECURITY AGENCY										
Freedmen's Hospital★[1]	Washington D C	R W Scott	5,5		38	20	1	4	[illegible]	
NONFEDERAL										
Carraway Methodist Hospital★[1]	Birmingham Ala	J H Ramsey	2 035	7 571	35	16	1	1	1	150
Children's Hospital[1]	Birmingham Ala	H Kennedy Jr	2 226	9 262	02	41	2	3	2	50
Jefferson Hillman Hospital★[1]	Birmingham Ala.	B Chenoweth Jr	2,2[illegible]0	7,259	66	50	1	3	2	50
Lloyd Noland Hospital★	Fairfield, Ala	G C McCullough	022	10 391	18	9	1	4	1	225
City Hospital★	Mobile Ala	J MacBell	1 028	2 053	43	27	1	1	1	175
University Hospital★[1]	Little Rock Ark	W A. Reilly	2 354	4 185	114	57	2	5	2	75
Kern General Hospital	Bakersfield Calif	R. Cohen	4 857	11 750	121	109	2	3	2	350
San Joaquin General Hospital★[1]	French Camp Calif	W T Auld	1 119	7 185	26	23	1	1	1	220
General Hospital of Fresno County★[1]	Fresno Calif	C S Mitchell	1 233	6 121	85	24	3	3	1	206
Seaside Memorial Hospital★[1]	Long Beach Calif	H M VanDyke	1 670	11 365	33	10	1	1	1	150
California Babies and Children's Hospital[1]	Los Angeles	T L. Birnberg	340	17 799	3	1	2	4	1	125
Children's Hospital★[1]	Los Angeles	E S Fish	2 122	37 584	124	111	8	23	2	40
Los Angeles County Hospital★[1]	Los Angeles	T Goldman	11 659	11 922	423	296	11	11	[illegible]	165
Queen of Angels Hospital★[1]	Los Angeles	M H Jones	1 782	2 485	17	9	1	2	2	100
White Memorial Hospital★[1]	Los Angeles	M. B Brooks	457	15 647	13	10	2	3	[illegible]	120
Children's Hospital of the East Bay[1]	Oakland Calif	J Luzzatti	7 0[illegible]6	35 165	64	53	5	10	2	150
Highland Alameda Hospital★[1]	Oakland Calif	A L Gleason	2,883	5 127	83	37		1	1	145
Permanente Foundation Hospital★[1]	Oakland Calif	A King	080	30 7[illegible]8	18	12		4	1	175
San Diego County General Hospital★[1]	San Diego Calif	F H Feldman	2 055	1 474	65	35	1	1	1	125
Children's Hospital★[1]	San Francisco	H E Thelander	810	4 787	16	11	1	4	[illegible]	60
Mount Zion Hospital★[1]	San Francisco	E Wolff	1 384	1 057	26	21	1	1	1	75
St. Mary's Hospital★[1]	San Francisco	R G Flood	2 132	3 639	7	0	1	2	[illegible]	100
Stanford University Hospitals★[1] [85]	San Francisco	J A Anderson	447	13 006	31	30	2	6	2	50
University of California Hospital★[1] [85]	San Francisco	W C Deamer	1 024	15 159	51	41		4	2	75
Harbor General Hospital★[1]	Torrance Calif	A J Moss	1 786	891	50	36	2	4	2	165
Children's Hospital[1]	Denver	R J McDonald	3 054	5 138	88	83	6	10	[illegible]	50
University of Colorado Medical Center										
Colorado General Hospital★[1]	Denver	H H Gordon	1 643	12 395	101	86	5	9	2	75
Denver General Hospital★[1] [24]	Denver	J Flett Jr	1 270	11 942	28	23	1	4	[illegible]	75
Hartford Hospital★[1]	Hartford Conn	J B Griggs	950	129	29	24	1	[illegible]	2	60
Grace-New Haven Community Hospital										
New Haven Unit (University Service)★[1]	New Haven Conn	G Powers	465	11 419	62	42	6	11	2	40
Hospital of St. Raphael★[1]	New Haven Conn	W McGuire	1 723	364	4	2	2	2	1	75
Waterbury Hospital★[1]	Waterbury Conn	J H Root	2 044	883	11	10	1	1	1	100
Delaware Hospital★[1]	Wilmington Del	C E Wagner	4 015	1 405	48	20	1	3	1	130
Children's Hospital[1]	Washington D C	W S Anderson and E B Brooks	9 362	65 010	126	110	12	20	2	30
Gallinger Municipal Hospital★[1]	Washington D C	I Hoeck	991	12 710	30	16	5	10	2	100
Georgetown University Hospital★[1]	Washington D C	F Burke	1 093	1 973	10	10	1	2	1	50
Providence Hospital★[1]	Washington D C	W J O'Donnell	1 509	768	4	4	1	1	1	75
Duval Medical Center★	Jacksonville Fla	L W Holloway	670	7 167	80	38	1	1	1	125
St. Vincent's Hospital★[1]	Jacksonville Fla	L. W Holloway	2 128		15	7	1	1	1	125
Jackson Memorial Hospital★[1]	Miami Fla	W A Quillan	1 216	4 902	70	38	3	4	[illegible]	60
Crawford W Long Memorial Hospital★[1]	Atlanta Ga	I H Muse	1 403	2 750	40	18	5	6	2	75
Grady Memorial Hospital★[1]	Atlanta Ga	R W Dickson	787	50 513	81	39	4	10	2	20
Henrietta Egleston Hospital for Children[1]	Atlanta Ga	M H Roberts	1 381		28	10	3	3	1	100
University Hospital★[1]	Augusta Ga	H B O'Rear	1 725	3,219	75	25	3	6	2	40
Children's Memorial Hospital[1]	Chicago	J A Bigler	3 762	46 722	90	83	12	16	2	75
Cook County Hospital★[1]	Chicago	A Levinson	7 091	3 138	261	203		15	2	22
Mercy Hospital★[1]	Chicago	H W Elghammer	1 743	3 780	20	20	2	4	2	25
Michael Reese Hospital★[1]	Chicago	B Kagan	6 400	22 127	171	141	4	11	2	25
Mount Sinai Hospital★[1]	Chicago	I M Levin	1 032	4 133	30	28	1	2	2	50
Presbyterian Hospital★[1]	Chicago	H N Sanford	1 414	8 453	61	52	1	2	2	25
Provident Hospital★[1]	Chicago	R N Jefferson	605		17	15	1	2	2	50
Research and Educational Hospitals★[1]	Chicago	H G Poncher	470	11 043	29	27	2	6	2	55
St. Joseph Hospital★[1]	Chicago	A. L. Hoyne	1 101	1,280	23	10	1	1	1	125
St. Luke's Hospital★[1]	Chicago	A Biggs	1,277	7,248	14	14	1	2	[illegible]	25
University of Chicago Clinics★[1]	Chicago	F H Wright	1 037	20,557	41	32	7	10	2	
Little Company of Mary Hospital★[1]	Evergreen Park Ill.	F C Lawler	2 840		9	1	3	3	1	100
West Suburban Hospital★[1]	Oak Park Ill	C D Butler	2 146	1 305	15	8	2	2	1	150
St. Francis Hospital★[1]	Peoria Ill	H R Miller	1,203	1 334	55	28	1	1	1	100
Indianapolis General Hospital★[1]	Indianapolis	L Rosenbaum	2 020	10 801	89	20	3	3	[illegible]	80
Indiana University Medical Center★[1]	Indianapolis	L. Meiks	1 453	6,208	105	119	3	6	2	150
St. Vincent's Hospital★[1]	Indianapolis	B K Rust		374		27	2	2	1	[illegible]
Iowa Methodist Hospital★	Des Moines Ia	L. F Hill	3 987	9 746	85	56	4	9	2	100
University Hospitals★[1]	Iowa City	P C Jeans	1 830	3 701	78	57	3	1	2	60
University of Kansas Medical Center★[1]	Kansas City Kans	H Miller	1 136		67	58	3	6	2	100
St. Joseph Infirmary★[1]	Louisville	H S Andrews	1 936	414	43	21	1	3	2	150
University of Louisville Hospitals Children's Hospital Louisville General Hospital★[1]	Louisville	L. T Davidson	2 051	14,587	93	50	6	14	2	45
Charity Hospital of Louisiana★[1]	New Orleans									
Independent Unit		W C Rivenbark	687	5 585	27	18	2	4	2	25
Louisiana State University		M L Wegman	1 100	8 713	44	54	4	8	2	25
Tulane University		R V Platou	1,558	7 700	65	41	4	8	2	25
Hotel Dieu-Sisters Hospital★[1]	New Orleans	A Sullivan	1 985	701	12	6	1	2	1	100
Southern Baptist Hospital★[1]	New Orleans	J E Bailey	1 610		11	4	1	1	1	125
Touro Infirmary★[1]	New Orleans	S Chapman	087	7 070	14	14	1	2	[illegible]	17
Shreveport Charity Hospital★[1]	Shreveport La	C H Webb	2 079	1 714	02	39	2	4	[illegible]	60
Central Maine General Hospital★[1]	Lewiston Me	H C Thacher	1 005	731	18	14		1	1	125
Baltimore City Hospitals★[1]	Baltimore	H L Harrison	1 190	14 316	89	64	2	5	[illegible]	15
Johns Hopkins Hospital★[1]	Baltimore	E F Schwentker	1 428	14 953	141	116	9	37	[illegible]	41 6[illegible]
Mercy Hospital★[1]	Baltimore	F B Smith	850	2 360	10	7	1	2	1	75
Sinai Hospital★[1]	Baltimore	A. J Schaffer	4[illegible]8		47	41	2	3	1	35
Union Memorial Hospital★[1]	Baltimore	W C Stifler Jr	581	2 073	12	10	2	3	1	40
University Hospital★[1]	Baltimore	J E Bradley	580	11 239	70	50	4	8	[illegible]	
Boston City Hospital★[1]	Boston	M J English	4 682	13 873	128	20		2	2	110
Boston Floating Hospital	Boston	J M Baty	1 79[illegible]		51	45	8	9	[illegible]	25
Children's Hospital★	Boston	C Janeway	3 101	22 586	257	200	22	48	[illegible]	4
Massachusetts General Hospital★[1]	Boston	A M. Butler	067	5 020	14	9	4	7	2	41 64
Worcester City Hospital★[1]	Worcester, Mass.	A S. O'Connor	046		17	11	1	1	1	100
University Hospital★[1]	Ann Arbor Mich	J Wilson	1 340	14,853	100	78	15	31	2	171

Numerical and other references will be found on page 462

18 PEDIATRICS—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
Children's Hospital [1]	Detroit	P A Woolley	3 601	52 924			10	21	2	100
Harper Hospital*[1]	Detroit	E Martmer	1 956	1 228	39	23	1	2	1	205
Henry Ford Hospital*[1]	Detroit	J A. Johnston	1 794	26 970	33	17	[illegible]	[illegible]	2	225
Providence Hospital*[1]	Detroit	L. P Sonda	641		16	10	1	1	1	200
St. Mary's Hospital*[1]	Grand Rapids Mich	J C Montgomery	3 688	64	66	22	1	1	1	125
Saginaw General Hospital*[1]	Saginaw Mich	R M Kempton	1 660	1 994	15	13		2	1	300
Minneapolis General Hospital*[1]	Minneapolis	I H. Adams	1 870	4 770	33	18	2	4	2	125
Northwestern Hospital*[1]	Minneapolis	E S Platou	1,544		17	13	1	1	1	175
St. Barnabas Hospital*[1]	Minneapolis	R G Gibbs	2,237		26	22	1	1	1	
University of Minnesota Hospitals*[1]	Minneapolis	I McQuarrie	1 710		91	80	[illegible]	16	2	
Mayo Foundation	Rochester Minn	R L J Kennedy					6	18	2	135
Children's Mercy Hospital [1]	Kansas City Mo	H. M Gilkey	2 378	18 903	97	82	4	4	1	85
Kansas City General Hospital No 1*[1]	Kansas City Mo.	F H Schorer	634	4,239	15	9	1	2	1	75
Homer C Phillips Hospital*[1]	St Louis	P J White	4 462	9,274	121	10		2	2	137 80
Jewish Hospital*[1]	St Louis	M Deutsch	958	1 883	4	3		1	1	100
St. Louis Children's Hospital [1]	St Louis	A F Hartmann	3 675	34 928	164	123	14	25	2	10
St. Louis City Hospital*[1]	St. Louis	D Thurston and A Peden	2 086	9 496	51	23	3	4	2	123 80
St. Mary's Group of Hospitals*[1]	St Louis	P C Danis	1 719	13,539	47	32	4	12	2	35
Creighton Memorial St. Joseph's Hospital*[1] [61]	Omaha Nebr	J H Murphy	755	5 130	21	15	1	2	2	100
University of Nebraska Hospital*[1] [61]	Omaha Nebr	H M Jahr	536	2 491	14	13	3	5	2	125
Mary Hitchcock Memorial Hospital*[1]	Hanover N H	C C Stewart	833	4,255	10	9	1	2	1	163
Cooper Hospital*[1]	Camden N.J	A Del Duca	1 108	2 705	71	44	1	4	1	83 33
Jersey City Hospital*[1]	Jersey City N.J	C P De Fuccio	2,272	10 728	34	18	4	7	2	35
Babies Hospital-Coit Memorial [1]	Newark N.J	M G Gregory	3 063	4 635	24	19	2	4	1	50
St Michael's Hospital*	Newark N.J	H A. Murray	2 691	6 194	32	24	3	3	2	100
Albany Hospital*	Albany N Y	E S Goodwin	549	2 230	19	14	1	3	2	50
St Peter's Hospital*	Albany N Y	H F Leahy					1	1	1	150
Beth El Hospital*[1]	Brooklyn	B Schick	4 116	2 650	64	55	1	1	1	100
Brooklyn Hospital*[1]	Brooklyn	T M Lamb	399	6 652	11	4	1	1	1	25
Coney Island Hospital*[1]	Brooklyn	S Nussbaum	1 781	7 484	42	30	1	2	1	90
Cumberland Hospital*[1]	Brooklyn	T B Givan	2 453	6 901	37	29	3	4	2	80
Greenpoint Hospital*[1]	Brooklyn	L. Schiff	374	4,269	15	14	2	3	1	140
Jewish Hospital*[1]	Brooklyn	B Kramer	5 617	5 382	120	86	4	9	2	25
Kings County Hospital*[1]	Brooklyn	L S Mullin and L. Krahulik	2 560	7 034	125	70	2	4	2	
Long Island College Hospital*[1]	Brooklyn	C A. Weymuller	527	7 762	50	27	2	4	2	25
Maimonides Hospital*[1]	Brooklyn	J Meisel and M Palinsky	940	3 377	18	9	2	3	2	75
Methodist Hospital*[1]	Brooklyn	W F Watton Sr	486	4 169	56	30	1	2	1	25
Norwegian Lutheran Deaconesses Home and Hospital*[1]	Brooklyn	J A Monfort	629	837	9	38	1	2	1	75
St. Catherine's Hospital*[1]	Brooklyn	J P Lombard	471	2 400	18	6	1	1	1	75
St Mary's Hospital*[1]	Brooklyn	K G Jennings	414	1 228	16	10	1	2	1	80
Children's Hospital [1]	Buffalo N Y	M I Rubin	1 952	17 740	145	109	17	18	2	25
Edward J Meyer Memorial Hospital*[1]	Buffalo N Y	F J Gustina	1,245	11 644	26	11	3	3	1	100
Mary Imogene Bassett Hospital*[1]	Cooperstown N Y	T C Goodwin	206	5 507	2	2	1	1	1	83 33
Flushing Hospital and Dispensary *[1]	Flushing N Y	H T Vogel	2 096	1 998	30	15	1	1	1	100
Mary Immaculate Hospital*[1]	Jamaica N Y	A A Trivilino and V G Tosti	608	1 135	33	19	2	2	1	110
Queens General Hospital*[1]	Jamaica N Y	H A Reisman	2 782	4 069	87	63	2	4	2	80
Bellevue Hospital Div III New York University *[1]	New York City	L. E Holt Jr	3 000	2,500	100	60	17	23	2	50
Beth Israel Hospital*[1]	New York City	P Cohen	259	2 781	14	10	2	2	1	50
Bronx Hospital*[1]	New York City	J H Lapin	559	4 160	13	6	1	2	2	75
Flower and Fifth Avenue Hospitals*[1]	New York City	L. Slobody	1 064	5,344	24	19	3	4	2	
Fordham Hospital*[1]	New York City	J Golomb	1 493	2 636	41	29	2	3	2	80
Gouverneur Hospital*[1]	New York City	A G DeSanctis	734	8 431	6	5			1	90
Harlem Hospital*[1]	New York City	M Gleich	1 129	17 644	153	100	3	3	2	90
Lenox Hill Hospital*[1]	New York City	A Anderson	550	3 785	13	8	1	1	2	50
Lincoln Hospital*[1]	New York City	H S Altman	990	13 084	43	14	2	5	2	60
Metropolitan Hospital*[1]	New York City	L B Slobody	1 935	10 316	87	57	3	5	2	80
Morrisania City Hospital*[1]	New York City	L H Barenberg	592	4 855	22	18	1	3	2	80
Mount Sinai Hospital*[1]	New York City	H L Hodes	2 000	24 913	76	50	6	6	2	50
New York City Hospital*[1]	New York City	E E Amerman	3 000	7 043	35	31	1	3	2	80
New York Foundling Hospital [1]	New York City	A J Vignec	861	6,346	0	0	4	4	1/2	50
New York Hospital*[1]	New York City	S Z Levine	1,530	33 860	122	106	9	16	2	25
New York Infirmary *[1]	New York City	R M. Bakwin	237	3 036	5	4	1	1	1	75
Presbyterian Hospital*[1] [62]	New York City	R McIntosh	4 322	30 248	166	123	4	17	2	208
Roosevelt Hospital*[1]	New York City	A T Martin	507		3	2		2	1	
†St Clare's Hospital*[1]	New York City	C H O'Regan	2,272	6,546	12	6	2	3	1	25
St Luke's Hospital*[1]	New York City	F H. Wilke	1 027	7,895	16	10	2	4	2	60
St Vincent's Hospital*[1]	New York City	A J Vignec	2 106	8,860	67	53	1	2	2	50
University Hospital*[1]	New York City	A G DeSanctis	675	10 153	23	15	5	5	2	80
Genesee Hospital*[1]	Rochester N Y	J Glaser	529	1 910	9	8	1	1	2	42 50
Rochester General Hospital*[1]	Rochester N Y	F W Bush	2 602	2,349	12	12	1	2	1	55
Strong Memorial Rochester Municipal Hospitals*[1]	Rochester N Y	S W Clausen	1 436	8,526	69	60	3	7	2	41 66
St Vincent's Hospital*	Staten Island N Y	C McCormick	3 066	972	29	12	1	1	1	125
Sea View Hospital [1]	Staten Island, N Y	B Ratner	301		7	2	5	5	1	140
State University Medical Center [59]	Syracuse N Y	T C Wyatt	7 712	5 930	258	190		18	2	125
Grasslands Hospital*[1]	Valhalla N Y	F D Barnes	573	2 457	15	13	1	3	2	125
Charlotte Memorial Hospital*	Charlotte N C	J R Adams	622	3 262	14	13	1	2	2	100
Duke Hospital*[1]	Durham N C	W C Davison	1 040	15 104	82	54	6	13	2	
Watts Hospital*[1]	Durham N C	A H London	812	1 799	33	18		2	2	50
Sternberger Hospital for Women and Children [1]	Greensboro N C	F Benbow	1 813	302	22	8		1	1	145
Rex Hospital*[1]	Raleigh N C	A S Root	819	1,593	23	5	1	1	1	150
Babies Hospital [1]	Wilmington N C	J B Sidbury	1 770	7,500	18	11	1	2	1	100
James Walker Memorial Hospital*[1]	Wilmington N C	J C Knox	3 471	3 045	53	14	1	1	1	150
City Memorial Hospital*[1]	Winston Salem N C	E Conrad	2 654	2 011	38	8	1	1	1	150
North Carolina Baptist Hospital*[1]	Winston-Salem N C	R B Lawson	2,367	7 887	78	44	3	5	2	41 66
Children's Hospital [1]	Akron Ohio	A Miller	2 641	1,585	80	55	4	5	2	200
Children's Hospital [1]	Cincinnati	A A Weech	2 834	11 253			9	19	2	46
Cincinnati General Hospital*[1]	Cincinnati	A A Weech	1 193	9,381	74	63	18	19	2	
Good Samaritan Hospital*[1]	Cincinnati	E A Wagner	2 156		33	31	1	1	1	155
University Hospitals*[1]	Cleveland	S Spector	3 018	21 609	172		3	12	2	
Children's Hospital [1]	Columbus Ohio	E. H Baxter	5,301	9,868			4	9	2	100
Mercy Hospital*[1]	Toledo, Ohio	L E Payne	824	1 794	58	30	1	1	1	137 50
University Hospitals*[1]	Oklahoma City	C H Hall	961	7 951	94	43	4	4	2	50
Hillcrest Memorial Hospital*[1]	Tulsa Okla	R M Wadsworth	1 964		36	17	1	1	2	75
St John's Hospital*[1]	Tulsa Okla	M J Searle	4 067		28	15	2	2	1	150
University of Oregon Medical School Hospitals and Clinics*[1]	Portland Ore	A J Hill	838	7,310	53	50	2	4	2	85

Numerical and other references will be found on page 462

18 PEDIATRICS—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
Abington Memorial Hospital*1	Abington, Pa	T S Wilder	870	403	10	8	2	2	1	50
Children's Hospital 1	Philadelphia	J Stokes Jr	1 961	20 928	77	60	30	37	2	100
Children's Hospital of the Mary J Drexel Home 1	Philadelphia	E P Bacon and J Lyon	210	4 712	5	4	2	2	1	63
Germantown Dispensary and Hospital*1	Philadelphia	P S Barba	3 568	1 093	20	14	1	1	1	50
Graduate Hospital of the University of Pennsylvania*1	Philadelphia	J A Ritter	562	1 092	10	15	2	2	1	
Hahnemann Hospital*1	Philadelphia	C C Fischer	755	6,575	37	34	3	5	2	50
Hospital of the University of Pennsylvania*1	Philadelphia	J Stokes Jr	672	5 470	12	12	0	0	2	
Hospital of the Woman's Medical College of Pennsylvania*1	Philadelphia	E P Bacon	495	2 643	3	3	1	2	2	60
Jefferson Medical College Hospital*	Philadelphia	E L Bauer	669	13 225	42	20	2	2	3	
Jewish Hospital*1	Philadelphia	H Lowenburg and R A Schless	742	303	11	0	1	3	1	50
Mount Sinai Hospital*1	Philadelphia	I P Morris	327	2 792	6	6	1	1	1	50
Philadelphia General Hospital*1	Philadelphia	J A. Jones	1 528		107	34	3	5	2	75
Temple University Hospitals									2	
St Christopher's Hospital for Children 63	Philadelphia	W E Nelson	2 441	40 767			8	15		50
Temple University Hospital	Philadelphia	W E Nelson	130	8 642	2	2		15		
St. Luke's and Children's Medical Center*1	Philadelphia	J I Redman	556	3 582	14	8	2	2	1	75
Allegheny General Hospital*1	Pittsburgh	T O Elterich	405	2 173	22	13	2	2	1	100
Pittsburgh Medical Center 1 76	Pittsburgh	E R McCluskey	3 006	22 723	128	90	7	16	2	41 66
Western Pennsylvania Hospital*1	Pittsburgh	H C Flood	614	1,314	0	0	1	1	1	100
Robert Packer Hospital*1	Sayre Pa		1,208	2 637	21	14		1	2	150
Charles V Chapin Hospital 1	Providence R I	H G Calder	1 425	1 198	13	10	4	4	1	50
Rhode Island Hospital*1	Providence R I	R. M Lord	1 122	4 663	28	18	2	4	2	60
Roper Hospital*1	Charleston S C	M W Beach	3 112	9 081	106	65	2	4	2	50
Columbia Hospital*1	Columbia S C	H W Moore	2 183	5 753	46	24	1	2	2	125
T C Thompson Children's Hospital 1	Chattanooga Tenn	W E Van Order	3 131	17 850	178	45	4	4	1	90
Knoxville General Hospital*	Knoxville Tenn	J G Eblen	2 070	749	82	24	1	1	1	95
Baptist Memorial Hospital*	Memphis Tenn	C V Croswell	1 278	480	50	23	1	1	1	75
John Gaston Hospital*	Memphis Tenn	F T Mitchell	2 058	19 902	98	62	5	8	2	
Methodist Hospital*	Memphis Tenn	W D Mims	1 425	649	43	16	1	1	2	75
St. Joseph Hospital*1	Memphis Tenn	H J Jacobson	1 441	743	26	12	3	3	2	150
George W Hubbard Hospital of Meharry Medical College*1	Nashville	E P Crump	932	10 061	63	24	1	3	2	75
St. Thomas Hospital*1	Nashville	J C Overall	768		19	9	1	2	1	150
Vanderbilt University Hospital*1	Nashville	A Christie	850	11 664	70	42			2	
Children's Medical Center 1	Dallas Tex	G Forbes	3 321	31 678	72	51	6	13	3	50
St Paul's Hospital	Dallas Tex	F A Norman					2	2	1	
University of Texas Medical Branch Hospitals*1										
John Sealy Hospital	Galveston Tex	A E Hansen	1 867	8 915	83	63	4	11	3	50
Hermann Hospital*1	Houston	R J Blattner	710	8 044	47	29	3	9	3	75
Jefferson Davis Hospital*	Houston	R J Blattner	4 219	26 540	128	38	3	6	3	25
Santa Rosa Hospital*	San Antonio Tex	S R Kalski	1 998	976	63	76	2	2	1	150
Salt Lake County General Hospital*1	Salt Lake City	J Bosma	812	4,599	48	40	6	8	3	25
Mary Fletcher Hospital*1	Burlington Vt	R J McKay	322	81	8	5	1	1	1	50
University of Virginia Hospital*1	Charlottesville Va	W W Waddell	711	5 711	67	30	2	4	2	50
Medical College of Virginia—Hospital Division*1	Richmond	L E Sutton Jr	1 761	11,294	102	40			2	46 50
Children's Hospital 1	Seattle Wash	J I Durand	2 985	19 743	64	52	3	3	3	110
King County Hospital Unit No 1 (Harborview)*1	Seattle Wash	W B Seelye	1 204	2 221	37	27	1	1	2	100
State of Wisconsin General Hospital*1	Madison Wis	J E Gonce Jr	728	2 991	32	26	1	3	2	25
Milwaukee Children's Hospital*1	Milwaukee	F R Janney	5 183	29 064	95	72	9	18	2	75
Milwaukee County Hospital*1	Milwaukee	M G Peterman	3 746	3 832	40	32	1	2	3	50
Kauikeolani Children's Hospital 1	Honolulu T H	D C Marshall	2 167	4 420	36	28	2	5	3	150
Bayamon District Hospital*1	Bayamon P R		1 438	302	154	38	1	1	1	250
San Juan City Hospital*1	San Juan P R	A. Ortiz	1 603	61,324	177	45	2	5	2	150

19 PHYSICAL MEDICINE AND REHABILITATION

The following services are approved by the Council and the American Board of Physical Medicine and Rehabilitation. Residencies in this specialty have been approved without specifying the number of years for which they are accredited The Board will give appropriate credit for training in these hospitals on an individual basis

Hospitals 43 Assistant Residencies and Residencies, 67

Name of Hospital	Location	Chief of Service	Inpatients Treated	Number of Treatments	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES ARMY							
Letterman Army Hospital*	San Francisco	A. E White	3,330	74 001			
Fitzsimons Army Hospital*	Denver	H B Luscombe	19 403	258 913	1	4	
Army Medical Center*27	Washington D C	J H Kultert	6 755	263 466	3	5	
VETERANS ADMINISTRATION							
Veterans Admin. Hospital*1	Long Beach Calif	R H Nyquist	10,922	195 810	1	2	
†Veterans Admin Hospital 1	Fort Logan Colo	F J Fricke	907	38 326			
Veterans Admin Hospital	Hines Ill	L B Newman	5 665	450 711			
Veterans Admin Hospital 1	Wadsworth Kans	L Blau	3 169	192 760			
Veterans Admin Hospital 1	Framingham Mass	F Freidland	7 000	210 000	1	3	
Veterans Admin Hospital 1	Jefferson Barracks Mo	E H Weissenberg	2,215	77 491	1	1	
Veterans Admin Hospital 1	New York City	A S. Abramson	13,819	314 026	3	9	
Veterans Admin Hospital 1	Cleveland	H T Zankel	6 414	81,929	1	1	
†Veterans Admin Hospital	Portland Ore	E W Fowlks	4 951	110 420	1	1	
†Veterans Admin. Hospital 1	Aspinwall Pa	S Machover	2,516	106 131		1	
Veterans Admin Hospital*1	Houston Tex.	B L Boynton	1 652	6 894	1	1	

Numerical and other references will be found on page 462

19 PHYSICAL MEDICINE AND REHABILITATION—Continued

Name of Hospital NONFEDERAL	Location	Chief of Service	Inpatients Treated	Number of Treatments	First Year Residences Offered[8]	Total Residences Offered[8]	Beginning Stipend (Month)
Los Angeles County Hospital*1	Los Angeles	E Austin		91 836		1	165
White Memorial Hospital*	Los Angeles	F B Moor	105		1	1	120
University of Colorado Medical Center Colorado General Hospital*1	Denver	H. L Dinken	2 580	45 870	1	3	75
State of Connecticut Veterans Home & Hospital	Rocky Hill Conn				3	3	
Emory University Hospital*	Emory University Ga	R L. Bennett	1 719	10 473	1	1	50
Georgia Warm Springs Foundation	Warm Springs Ga	R. L. Bennett	973	104 401	1	3	250
Cook County Hospital*1	Chicago	D Kobak	7,501	37 516			
Michael Reese Hospital*1	Chicago	C O Molander	2 254	10 589	1	1	25
Northwestern University Medical Center 80	Chicago		13 590	40 962			
Research and Educational Hospitals*1	Chicago	H W Kendell	5 688	11 769	1	3	55
University of Kansas Medical Center*1	Kansas City Kans	D L. Rose	2 456	42 310	1	1	100
Massachusetts General Hospital*	Boston	A. L Watkins	2 925	31 999	0	9	41 66
University Hospital*	Ann Arbor Mich						
University of Minnesota Hospital*1	Minneapolis	M Knapp	20 409	20 436	4	4	
Mayo Foundation	Rochester Minn	F H Krusen			2	6	135
Barnes Hospital*	St. Louis	S Mead	9 759	9 759	0	1	
†Bellevue Hospital, Div III New York University *1	New York City	H A Rusk	4 058	110 705		7	80
Goldwater Memorial Hospital*	New York City	M Dacso	733	50 706	1	2	80
Hospital for Joint Diseases*1	New York City	J Weiss		94 631	1	1	40
Hospital for Special Surgery	New York City	K. C Hansson	20 806	40 810	1	1	160
Mount Sinai Hospital*1	New York City	W Bierman	11 942	36 970	1	1	60
New York City Hospital*1	New York City	F K Safford Jr	1 138	41 088	1	1	130
†Presbyterian Hospital*1	New York City	W B Snow	35 865	103 546	1	1	208
St. Luke's Hospital*1	New York City	R Muller	909	98 954	1	1	60
†Rehabilitation Hospital	West Haverstraw N Y	M Hoberman	5 868	408,371	1	1	225
Cleveland Clinic Hospital 1	Cleveland	S G Gamble	17 062	38 475	1	4	
Hospital of the University of Pennsylvania*1	Philadelphia	G M Piersol	1 636	35 639	0	1	
Philadelphia General Hospital*1	Philadelphia	A A Martucci	2 827	23 733	1	1	75
Medical College of Virginia—Hospital Division*1	Richmond Va	W J Lee	4 575	40 327			46 50

20 PLASTIC SURGERY

The following services are approved by the Council and the American Board of Plastic Surgery Residencies in this specialty have been approved without specifying the number of years for which they are accredited The Board will give appropriate credit for training in these hospitals on an individual basis

Hospitals, 25 Assistant Residencies and Residencies 44

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Beginning Stipend (Month)
VETERANS ADMINISTRATION									
Veterans Admin Hospital	Hines Ill	P Greeley	445		3	1	1		
Veterans Admin Hospital 1	New York City	H Conway	371	317	2	1	2	4	
Veterans Admin Hospital 1 43	White River Jct Vt.	R C Tanzer	373	1 453	3	3	1	2	
NONFEDERAL									
Franklin Hospital*1	San Francisco	H M Blackfield	327	300			1	2	100
St Francis Hospital	San Francisco								
Indiana University Medical Center*1	Indianapolis	H M Trusler	244					1	200
University of Kansas Medical Center*1	Kansas City Kan.	D W Robinson	551	536			1	1	100
Charity Hospital of Louisiana*	New Orleans								
Louisiana University		W R Metz	366	2 163	10			1	25
Tulane University		N Owens	310	1 859	17	2		1	25
Johns Hopkins Hospital*	Baltimore								
Mayo Foundation	Rochester Minn	F A Figi					2	6	135
Barnes Hospital*	St Louis	J B Brown	851		4	1			
Hospital of St Barnabas and for Women and Children*1	Newark N J	L. A Peer	689	803			1	2	100
Albany Hospital*1	Albany N Y	W B Macomber	348	234	1	1	1	1	50
Kings County Hospital*1	Brooklyn	W Coakley	1,265	3 499	37	9	1	2	
New York Hospital*1	New York City	H Conway	383		1		1	1	25
Presbyterian Hospital*1	New York City	J P Webster	605	3 768			2	6	208
Strong Memorial Rochester Municipal Hospitals*	Rochester, N Y	R M McCormack	280	432				1	66 66
Duke Hospital*	Durham N C	K L Pickrell	846	2 660	8	2	2	4	
†University Hospitals*1	Oklahoma City	J F Burton	243	756	7	1	1	1	50
Allentown Hospital*1	Allentown Pa	K M Marcks	398	896	8	8	1	1	100
Graduate Hospital of the University of Pennsylvania*1	Philadelphia	R H Ivy	146	184	1	1	1	1	
†Jefferson Medical College Hospital*	Philadelphia	T A Shallow	268	299	5	4	1	1	
Pittsburgh Medical Center 42 76	Pittsburgh	S M Dupertuis	389	677	0	2		1	41 66
Baylor University Hospital*	Dallas Texas								
University of Texas Medical Branch Hospital * John Sealy Hospital	Galveston Texas	T G Blocker	800	1 9,0	11	5	1	4	75

Numerical and other references will be found on page 462

21 PREVENTIVE MEDICINE AND PUBLIC HEALTH

The following programs have been approved by the Council and the American Board of Preventive Medicine and Public Health.

Department of Health	Location	Chief of Service	Local Areas	Population	Stipend
State of California	San Francisco	B Halverson	Alameda County[a]	159 182*	$150-350
			San Joaquin County	199 414*	
State of Delaware	Dover	F I Hudson Ex. Sec	Kent and Newcastle Counties[b]	145,568	$300
State of Florida	Jacksonville	W T Sowder	Alachua County	56 717	$175-300
			Dade-Miami	488 689	
			Hillsborough Tampa	248 536	
			Pinellas-St Petersburg	157 639	
State of Illinois	Springfield	R R Cross	Cook County[c]	721 148	$115
			Will County	134 499	
State of Maryland	Baltimore	R H Riley	Anne Arundel County	115 000*	
			Baltimore City	940 205	
			Baltimore County	269,362	
			Montgomery County	163 749	
			Washington County	78 000*	
State of Massachusetts	Boston	V A Getting	Brookline	56 959	$420
			Cambridge	120 670	
			Newton	81 730	
			Worcester	201 885	
State of Michigan	*Lansing*	A E Heustis	Calhoun County	112 243*	$400
			Kalamazoo City County	126 019	
			Wayne County[d]	398,266*	
State of Minnesota	Minneapolis	A J Chesley	Olmsted Rochester	4[illegible] 36[illegible]	75% of what job will pay[e]
New York City	New York City	J F Mahoney	Fort Greene	390 047*	$370
			Jamaica West	278 693*	
			Red Hook	171 196*	
			Tremont	302 927*	
State of New York	Albany	H E Hilleboe	Erie County	895 620	$350
			Geneva District[f]	89 957*	
			Poughkeepsie Dist[g]	140 150*	
			Tompkins County	59 186	
			Ulster County	91 172*	
			Westchester County[h]	339 068	
State of North Carolina	Raleigh	J W R Norton	Charlotte	133,219	$500[i]
			Forsyth Winston-Salem	145 000*	
			Orange-Person Chatham Lee	107 404	
State of Virginia	Richmond	L J Roper	Arlington County	136 000*	$150[j]
State of Washington	Seattle	*J A Kahl*	Kitsap-Bremerton	73 398	$530-650
			King-Seattle	731 117*	
			Clark Vancouver	84 836	

* Estimated

- (a) Excludes Alameda Berkeley and Oakland cities with full time health officers and Albany and Livermore with part time officers
- (b) Excludes the city of Wilmington
- (c) Excludes Berwyn Chicago Evanston Winnetka (including Glencoe and Kenilworth Villages) Oak Park and Stickney Township all with full time *health* officers
- (d) Excludes Detroit and Dearborn each with full time health officers
- (e) To those training for service in Minnesota only
- (f) Includes Ontario Schuyler and Yates counties
- (g) Includes Dutchess and Putnam counties.
- (h) Excludes Mount Vernon New Rochelle and Yonkers *all with full time health officers*
- (i) To those planning to work in state transportation costs only to others
- (j) It is expected that a larger stipend will be available to those who will remain in Virginia.

22 PROCTOLOGY

The following services are approved by the Council and the American Board of Proctology *Residencies in this specialty have been approved without specifying the number of years for which they are accredited* The Board will give appropriate credit for training in these hospitals on an individual basis

Hospitals 10 Assistant Residencies and Residencies 14

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Beginning Stipend (Month)
NONFEDERAL									
Mercy Hospital*[1]	Chicago	C L Martin	209	734	6	5	1	1	25
Mayo Foundation	Rochester, Minn	L A Buie					1	•	135
Millard Fillmore Hospital*[1]	Buffalo N Y	H C Cuess	560	13	1		1	1	50
Youngstown Hospital*[1]	Youngstown Ohio	P J Fuzy	406	96	6	5	1	1	125
Allentown Hospital[1]*	Allentown Pa	M Kleckner	514	66	4	1	1	1	100
Jefferson Medical College Hospital*	Philadelphia	T A Shallow	518	2,391			2	2	
Temple University Hospital*[1]	Philadelphia	H E Bacon	864	1 251	19	4		2	55 33
Pittsburgh Medical Center [76]	Pittsburgh	K Zimmerman	440	447					125
Reading Hospital[1]*	Reading Pa	F C Runyeon	562	401	9	4	1	1	50
Milwaukee County Hospital*[1]	Milwaukee	A C Schutte	957	1,377	18	7	1	3	

Numerical and other references will be found on page 462

23 PSYCHIATRY

The following services are approved by the Council and the American Board of Psychiatry and Neurology

Hospitals 242 Assistant Residencies and Residencies 1836

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered[8]	Total Residencies Offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY										
Letterman Army Hospital*	San Francisco	E B Litteral	2 364	3 663	3	3			3	
Fitzsimons Army Hospital*	Denver Colo	D B Peterson	1 734	3 034	4	4	4	15	3	
Army Medical Center*[27]	Washington D C	E R Inwood	1,595	3 357	2	2	7	20	3	
UNITED STATES NAVY										
U S Naval Hospital*	Oakland Calif								2	
U S Naval Hospital*	San Diego Calif								1	
U S Naval Hospital*	Great Lakes Ill								1	
U S. Naval Hospital*[1]	Bethesda, Md	S M Smith	633	2 624			1	8	3	
U S Naval Hospital*	Chelsea, Mass								1	
U S Naval Hospital*	Philadelphia	E K Caveny	937	3 4 2	7	2			2	
U S. Naval Hospital*	Portsmouth Va								1	
UNITED STATES PUBLIC HEALTH SERVICE										
U S Public Health Service Hospital[1]	Lexington Ky	L. J Zbranek and M A Diamond	5 101		28	19	9	15	3	
U S Public Health Service Hospital[1]	Fort Worth Texas	E W Green	2,350		31	21	5	10	2	
FEDERAL SECURITY AGENCY										
St Elizabeth s Hospital*[1]	Washington D C	W Overholser	8 473		495	346	8	24	3	
VETERANS ADMINISTRATION										
Veterans Admin Hospital[1]	Tuskegee Ala	P P Barker	2 759		90	57	4	4	2	
Veterans Admin Hospital[1]	North Little Rock Ark	F S Chappell	5 743	57	22	16	3	5	3	
Veterans Admin Hospital*[1]	Long Beach Calif	J Jacobs	490	598	4	4	3	9	3	
Veterans Admin Hospital*[1]	Los Angeles	B C Yeager	3,568		153	116	15	26	3	
Veterans Admin Hospital[1]	Palo Alto Calif	J J Prusmack	2 169	5 209	41	28		45	3	
Veterans Admin Hospital*[1]	Newington Conn	T P Sohler	314	1 105			4	8	2	
†Veterans Admin Hospital[1]	Augusta Ga	W A Walsh	1 650	735	29	21		3	2	
Veterans Admin Hospital[1]	Downey Ill	A Rodriguez	2,501		37	10	4	8	3	
Veterans Admin Hospital	Hines Ill	F C Gerty	523		19	7		18	3	
Veterans Admin Hospital[1]	Topeka Kans	S Rubin	2 400		18	16	32	90		
Veterans Admin Hospital	Lexington Ky	J W Straus	1 8 0		70	11		4	3	
Veterans Admin Hospital[1] [65]	Louisville	D I Moore	522	2 035	3	2	2	6	3	
Veterans Admin Hospital	New Orleans	H J Climo	472	13	3	2	1	2	2	
Veterans Admin Hospital[1]	Perry Point Md	F P Bannon	1 053	70	71	36	8	20	3	
Veterans Admin Hospital[1]	Bedford Mass	J L Hoffman	1 575		41	23	6	18	3	
Veterans Admin Hospital	Boston (West Roxbury)								1	
Veterans Admin Hospital[1]	Framingham Mass	W Bloomberg	996		1	1	5	22	3	
Veterans Admin Hospital	Dearborn Mich	I L Kubanek	521	690	44	14		6	3	
Veterans Admin Hospital[1]	Fort Custer Mich	A L. Olsen	2 545		53	33	6	6	3	
Veterans Admin Hospital[1]	Gulfport Miss	J J Blasko	1 627		39	31	7	7	3	
Veterans Admin Hospital[1]	Jefferson Barracks Mo	A K Baur	1,511	7 461	10	4	1	5	3	
Veterans Admin Hospital[1]	Lyons N J	A Launer	2 073		61	32	8	12	3	
Veterans Admin Hospital	Buffalo N Y								2	
Veterans Admin Hospital[1]	Canandaigua N Y	I M Levy	2 080	89	52	31	3	8	2	
Veterans Admin Hospital[1]	New York City	H I Flowers	1 771	3 632	8	4	10	26	3	
†Veterans Admin Hospital[1]	Northport N Y	J F Vavasour	2 006		29	21	11	11	3	
Veterans Admin Hospital[1]	Cleveland Ohio	I Halle	891	730	21	10	5	12	3	
Veterans Admin Hospital[1]	Coatesville Pa	A O Becker						40	3	
Veterans Admin Hospital*[1]	Houston Texas	O F Hubbard	6		4	4	2	4	2	
Veterans Admin Hospital[1]	Waco Texas	C T McMahan	3 3 3		73	29	3	4	1	
Veterans Admin Hospital*[1]	Richmond Va	B Nagler	694		1		1	7	2	
Veterans Admin Hospital[1]	Roanoke Va	I C Sewall	2,532	63	56	56	9	70	3	
Veterans Admin Hospital[1]	Tomah Wis	N C Marx	1 611	609	42	16			3	
NONFEDERAL										
Jefferson Hillman Hospital*[1]	Birmingham Ala	I A Kay	500	103					1	50
Agnews State Hospital	Agnew Calif								1	
Herrick Memorial Hospital*[1]	Berkeley Calif	A. F Bennett	411	358	3	2	1	2	2	100
Compton Sanitarium[1]	Compton Calif	C C Burn	404	1 800	2		1	8	1	250
Napa State Hospital[1]	Imola Calif	W A Oliver	5 065		724	78	2	2	1	268
Los Angeles County Hospital*[1]	Los Angeles	M C Carter	8 061	513	323	70	2	2	3	165
Norwalk State Hospital	Norwalk Calif								1	
Patton State Hospital[1]	Patton Calif	O L Gericke	2 11		330	131	1	1	1	208
Langley Porter Clinic Hospital[1] [37]	San Francisco	K M Bowman	374	20 024	2	1	9	32	3	255
Mount Zion Hospital*[1]	San Francisco	N Reider		5,574				3	2	75
Stanford University Hospitals*[1]	San Francisco	C S Johnson	178	5 73	1			3	3	50
Braewood Sanitarium	South Pasadena Calif	B Williamson	643		13	3	1	1	1	250
Pacific Colony[1]	Spadra Calif	G Tarjan	2 500	330	36	29	3	3	1	181
University of Colorado Medical Center Colorado Psychopathic Hospital	Denver	F C Ebaugh	968	1,253	10	5	12	38	3	125
Colorado State Hospital[1]	Pueblo Colo	J L. Rosenbloom	6 118		458	217	6	12	2	275
Institute of Living[1]	Hartford Conn	C I Von Salzen	1 224		10	2			3	275
Connecticut State Hospital[1]	Middletown Conn	R A Arnot	4 084	650	272	69	3	8	2	290
Silver Hill Foundation[1]	New Canaan Conn	W B Terhune	315	590			1	2	1	100
Grace-New Haven Community Hospital New Haven Unit (University Service)*[1] [64]	New Haven Conn	F Redlich	196	2 767	1		5	15	2	40
Fairfield State Hospital[1]	Newtown Conn	J E. Oltman	3 492	20	248	187	5	10	2	420
Norwich State Hospital[1]	Norwich Conn	M C Taylor	3 639	377	233	57	6	6	2	270
Delaware State Hospital	Farnhurst Del	M A Tarumianz	1 311	4,281	91	23	3	9	2	200
Gallinger Municipal Hospital*[1]	Washington D C	C J Gordon	3 362		45	17	3	3	1	125
Georgetown University Hospital*[1]	Washington D C	C W Raines	281	2,335			4	8	2	25
George Washington University Hospital*[1]	Washington D C	W Overholser	780	093	3	1	1	1	2	130
Duval Medical Center*	Jacksonville Fla	S C Bedell	505	1,526	11	0	1	1	1	300
University Hospital*[1]	Augusta Ga	H M Cleckley	581	101	7	2	1	3	2	40
Chicago State Hospital	Chicago	I Spinka	6 655	2 660	637	150	5	10	2	200
Cook County Hospital*[1]	Chicago	N C Use	8 261		141	12		4	3	125
Illinois Neuropsychiatric Institute	Chicago	F J Gerty					2	6	3	
Loretto Hospital*[1]	Chicago	J J Madden	565	350	2	2	2	2	1	200
Mercy Hospital*[1]	Chicago	J J Madden	360	3 003	1		1	1	1	25
Michael Reese Hospital*[1]	Chicago	R R Grinker	402	9,326	3	3	6	17	3	
St Luke s Hospital*[1]	Chicago	A P Solomon	664		11	9	1	1	1	25
University of Chicago Clinics*[1]	Chicago	N B Apter	176	6 013	1	1	3	9	3	25
Veterans Rehabilitation Center[1]	Chicago	D Slight	179	16 732			6	6	1	200
Wesley Memorial Hospital*[1]	Chicago	T T Stone	498		3	1	1	1	1	25

Numerical and other references will be found on page 462

23 PSYCHIATRY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered	Total Residences Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
Dixon State Hospital [1]	Dixon Ill	C K Bush	4 918	250	186	110	3	3	1	200
Elgin State Hospital	Elgin Ill	E Liebert	6 175	700	523	175	6	18	3	200
Kankakee State Hospital [1]	Kankakee Ill	G M Cowan	4 138	363	290	95	1	1	1	200
Lincoln State School and Colony [1]	Lincoln Ill	J Albaum	4 900		86	26			1	200
Manteno State Hospital [1]	Manteno Ill	A P Bay	10 282	1 682	676	102	2	6	2	200
Peoria State Hospital	Peoria Ill	H B Knowles	2 618	77	332	67			3	
North Shore Health Resort [1]	Winnetka Ill	S Liebman	424	421	5	5	2	2	1	
Central State Hospital	Indianapolis	M A Bahr	1 778	76	177	20	2	4	2	300
Indianapolis General Hospital*[1]	Indianapolis	M DeArmond	521	1 465	14	5	1	3	3	80
Indiana University Medical Center and Affiliated Hospitals	Indianapolis	H S Gaskill		718			2	6	3	150
Norways Sanatorium [1]	Indianapolis	P B Reed	656	458	9		2	6	2	290
Logansport State Hospital	Logansport Ind	G W Morrow	3 278		208	52	3	3	2	475
Mental Health Institute [1]	Cherokee Iowa	W C Brinegar	1 875		111	69	2	2	1	298
Iowa State Psychopathic Hospital [1]	Iowa City	W R Miller	364	3 720			4	12	3	150
University of Kansas Medical Center*[1]	Kansas City Kans	W Roth Jr	168	1 801	2	2	1	3	3	100
Menninger Sanitarium [1]	Topeka Kans	K A. Menninger	209	28,373			13	13	3	200
University of Louisville Services										
Louisville General Hospital*[1]	Louisville	S S Ackerly	783	2 100	8	3	1	6	3	166
Norton Memorial Infirmary*	Louisville	S S Ackerly	282	635	1	1	1	3	3	100
Charity Hospital of Louisiana [1]	New Orleans La	R G Heath and R A Matthews	160	6 007	1	1	4	10	3	25
De Paul Sanitarium	New Orleans La	W J Otis	1 064	140	10	2			3	
Johns Hopkins Hospital*[1]	Baltimore	J C Whitehorn	306	4 644	1			11	3	41 66
Seton Institute [1]	Baltimore	D Ross	625	100	10		3	9	2	125
Spring Grove State Hospital [1]	Catonsville Md	I Tuerk	3 282	1 496	128	22	3	8	2	
Chestnut Lodge Sanitarium [1]	Rockville Md	R A Cohen	182	4 182	8	3		6	1	250
Springfield State Hospital [1]	Sykesville, Md	M V Beyer	3 632	904	160	44	2	4	2	385
Sheppard and Enoch Pratt Hospital [1]	Towson Md	H M Murdock	401	58	12	4	5	12	3	166
Beth Israel Hospital*[1]	Boston	G L Bibring		1,368			1	4	1	200
Boston Psychopathic Hospital [1]	Boston	H C Solomon	1 200	9 000	5	4	6	15	3	200
Boston State Hospital [1]	Boston	E V Semrad	4,387	2 020	310	100	6	12	2	200
Massachusetts General Hospital*	Boston	S Cobb	94	5 075			2	3	2	41 66
Massachusetts Memorial Hospital*	Boston	W Malamud		3 330			2	6	3	150
New England Center Hospital*[1]	Boston	R D Adams	1 018					2	1	83 33
Peter Bent Brigham Hospital*	Boston	H M Fox					1	1	1	
Foxboro State Hospital [1]	Foxboro Mass	J T Shea	1 725	175	115	35	2	4	2	200
Danvers State Hospital [1]	Hathorne Mass	C A Bonner	3 383		282	55	1	1	1	200
Medfield State Hospital [1]	Medfield Mass	T F Lindberg	1 650		121	33	2	2	1	100
Northampton State Hospital [1]	Northampton Mass	J H F Longpre	3 103	231	216	45	2	2	1	200
Austen Riggs Foundation [1]	Stockbridge Mass	R P Knight	135	1 703				5	2	500
Taunton State Hospital [1]	Taunton Mass	B E Zawacki	703	468	247	71	6	6	2	430
Metropolitan State Hospital [1]	Waltham Mass	M Askoff and T P Krush	2 827	116	169	59		2	2	200
McLean Hospital	Waverley Mass	P M Howard	490		14	4	2	6	2	
Worcester City Hospital*[1]	Worcester Mass	F L Vibber	672		112	48	1	1	1	100
Worcester State Hospital [1]	Worcester Mass	D Rothschild	3 071	2 965	299	80	6	13	3	200
University Hospital*[1]	Ann Arbor, Mich	R W Waggoner	618	6 771	2	3	5	28	3	124
†St. Joseph's Retreat [1]	Dearborn Mich	M H Hoffmann	1,376	377	13	5	2	4	1	300
City of Detroit Receiving Hospital*[1]	Detroit	W Schmidt	6 467	2,371	163	46	3	7	3	217
Henry Ford Hospital*[1]	Detroit	T J Heldt	787	10 720	36	19		2	2	225
Wayne County General Hospital and Infirmary*[1]	Eloise Mich	R Leiser	5 124	8 941	289	107	3	9	3	252
Kalamazoo State Hospital [1]	Kalamazoo, Mich	C M Schrier	3,347	565	291	2	3	3	2	445
Pontiac State Hospital [1]	Pontiac Mich	P V Wagley	3 453	141	200	66	4	10	3	445
Traverse City State Hospital [1]	Traverse City Mich	R P Sheets	3 046	1 420	233	73	8	16	2	445
Ypsilanti State Hospital [1]	Ypsilanti Mich	O R Yoder	5 176	1 405	275	69	6	16	3	445
Hastings State Hospital	Hastings Minn								1	
Minneapolis General Hospital*[1]	Minneapolis	J C Michael	921	1 973	68	28	1	1	1	125
University of Minnesota Hospitals*[1] [66]	Minneapolis	D W Hastings	305		3	2		7	3	
Mayo Foundation	Rochester Minn						5	14	3	135
†Rochester State Hospital	Rochester Minn		2,281		139	53		5	1	
State Hospital No 1	Fulton Mo	G S Warnich	579		253	29	3	6	2	150
Kansas City General Hospital No 1*	Kansas City Mo	M L. Bills	547	2 171	13	8			1	75
State Hospital No 2 [1]	St Joseph Mo	O W Mullinax	3 631	53	171	18	3	3	2	200
Barnes Hospital*[1]	St. Louis	E F Gildea	556	5 832	5	3	3	21	3	
Homer G Phillips Hospital*[1] [9]	St Louis	E F Gildea							2	132
St. Louis City Hospital*[1]	St Louis	E Gildea and R E Britt	1 961	2 307	60	21	3	6	3	123
St Louis State Hospital [1]	St Louis	L H Kohler	3 704	300	164	71	10	30	3	250
Hastings State Hospital [1]	Ingleside, Nebr	J C Nielsen	807	221	135	50	4	8	2	300
Norfolk State Hospital [1]	Norfolk Nebr	G I Sandritter	1 430	1 180	29	29	2	3	1	340
Lutheran Hospital [1]	Omaha	R Young	1 702	1 089	5	4	1	2	2	200
University of Nebraska Hospital*[1]	Omaha	R H Young	188	1 007			7	13	3	125
New Hampshire State Hospital [1]	Concord N H	J L Smalldon	3,500	1 421	206	42	2	[illegible]	1	235
Essex County Overbrook Hospital	Cedar Grove N J	J G Sutton	3,391	578	315	86	5	8	2	230
New Jersey State Hospital [1]	Trenton N J	H B Magee	5,210	6 432	355	51	8	8	2	375
Albany Hospital*[1]	Albany N Y			777			1	3	3	50
Binghamton State Hospital [1]	Binghamton N Y	O H Boltz	2 716	1 170	243	99	2	2	2	300
Brooklyn State Hospital [1]	Brooklyn	C H Bellinger	3 456	1 900	576	46	4	12	3	360
Kings County Hospital*[1]	Brooklyn	H Potter	10 576	10 261	312	33	10	30	3	
Buffalo State Hospital [1]	Buffalo	C Fletcher	2 722	412	297	66	4	4	3	301 16
Edward J Meyer Memorial Hospital*[1]	Buffalo	S M Small	1 944	1 668	52	15	2	4	2	100
Central Islip State Hospital [1]	Central Islip, N Y	D Corcoran	6 698	3 189	668	157	6	13	3	304 16
Hillside Hospital [1]	Glen Oaks, N Y	J S A Miller	524	77	1		6	15	3	150
Gowanda State Homeopathic Hospital [1]	Helmuth N Y	W L. Hogeboom	3 693	2 958	253	52		6	2	311 60
Pinewood Sanitarium [1]	Katonah N Y	L Wender	330		2		1	1	1	225
Kings Park State Hospital [1]	Kings Park N Y	A E Soper	11 112	6 251	644	179	13	96	2	335 83
River Crest Sanitarium	Long Island City N Y	J C Kindred	709	1 725	21	2		2	1	250
Marcy State Hospital [1]	Marcy N Y	G L Warner	2 774	99	298	31	2	6	2	
Middletown State Homeopathic Hospital [1]	Middletown N Y	W A Schmitz	3 794	1 442	208	43	6	6	2	301
Bellevue Hospital, Div III New York University*[1]	New York City	L I Sharp	20,255	10 700	678	173	12	35	3	50
Manhattan State Hospital [1]	New York City	J H Travis	3 913	1 566	607	190	13	13	2	351
Mount Sinai Hospital*[1]	New York City	M R Kaufman	131	8 411			2	2	3	60
New York Hospital*[1]	New York City	O Diethelm	223	6 144	1		5	13	3	60
New York State Psychiatric Institute [1]	New York City	N D C Lewis	437	862	1	1			3	304
Rockland State Hospital [1]	Orangeburg N Y	A M Stanley	8 617	4 693	353	113	6	22	2	201 16
Stony Lodge Sanitarium [1]	Ossining N Y	B C Glueck Jr	110	876			2	2	1	200
Hudson River State Hospital [1]	Poughkeepsie N Y	W C Groom	6 137	931	439	100	5	7	2	
Creedmoor State Hospital [1]	Queens Village N Y	H A La Burt	6 646	2,915	330	48			2	301
Rochester State Hospital	Rochester N Y	B Pollack	3 358	1 430	368	63		7	2	304
Strong Memorial Rochester Municipal Hospitals*[1]	Rochester N Y	J Romano	822	7 097	3	2	4	12	2	41 65

Numerical and other references will be found on page 462

23 PSYCHIATRY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
Syracuse Psychopathic Hospital [1]	Syracuse N Y	N Beckenstein	626	1 355	4	1	2	4	2	304
Letchworth Village	Thiells N Y	H C Storrs	3 871		57	34			1	
Utica State Hospital [1]	Utica N Y	F J O Neill	2 556	1,354	202	31		1	2	304 16
Grasslands Hospital*[1]	Valhalla N Y	F V Rockwell	1 191	1,398	16	9	4	7	2	187
Pilgrim State Hospital [1]	West Brentwood, N Y	H J Worthing	12 157	2 978	911	244			2	
New York Hospital—Westchester Division [1]	White Plains N Y	J H Wall	722		11	2	3	3	3	125
†Willard State Hospital [1]	Willard N Y	K Keill	3 500	150	300	55	4	8	2	250
Harlem Valley State Hospital	Wingdale N Y	L P O Donnell	5 625	1 359	272	80	6	9	2	301 50
Duke Hospital*[1]	Durham N C	R. S Lyman	400	3 335			2	18	3	
Graylyn-North Carolina Baptist Hospital*[1]	Winston-Salem N C	L J Thompson	363	1 718			2	6	3	150
Windsor Hospital	Chagrin Falls Ohio	J H Nichols	749		10		1	1	1	200
Christ Hospital*	Cincinnati	H D Fabing	596		6	5		1	1	145
Cincinnati General Hospital*[1] [10] [67]	Cincinnati	M Levine	1 251	12,310	9	7	7	16	3	
Longview State Hospital [1]	Cincinnati	D Goldman	3 118		308	93	5	8	1	300
Cleveland Clinic Hospital [1] [9]	Cleveland	L J Karnosh					1	5	2	
Cleveland State Hospital [1]	Cleveland	M B Gordon	2 600		181		2	2	1	252
Cleveland State Receiving Hospital	Cleveland	F E Merritt	1 400		31	18	2	6	2	252
University Hospitals*[1]	Cleveland	D D Bond	155	3 245	1			1	2	
Columbus State Hospital [1]	Columbus Ohio	B Kovitz	3 413	1,320	179	85	4	12	2	252
Massillon State Hospital [1]	Massillon Ohio	A. G Hyde	3 149	1 160	211	53	3	3	1	130
Harding Sanitarium [1]	Worthington Ohio	H. S Evans	663	3 105	7	3	2	4	2	300
Central Oklahoma State Hospital [1]	Norman Okla	C A. Smith	2 915	300	203	1	3	3	1	300
Oregon State Hospital	Salem	D Brooks	3 000		350	90	4	4	1	450
Allentown State Hospital [1]	Allentown, Pa	R. W Goshorn	2 033	40	150	16	1	1	1	209 50
Danville State Hospital [1]	Danville Pa	V J Cassone	2 938	1,317	137	17	5	11	2	
Harrisburg State Hospital [1]	Harrisburg Pa	H K Petry	2 830	542	168	61			2	
Norristown State Hospital [1]	Norristown Pa	A. P Noyes	5 259		329	95	5	6	2	358
Friends Hospital [1]	Philadelphia	T L Dehne	371	1 104	23	6	6	6	2	250
Hospital of the University of Pennsylvania*[1]	Philadelphia	K. E Appel		11 937				8	2	
Institute of the Pennsylvania Hospital [1]	Philadelphia	L H. Smith	303	5 035	1			5	2	167
Jefferson Medical College Hospital*	Philadelphia	B L Keyes	71	1,549	1	9	1	1	1	
Mount Sinai Hospital*[1]	Philadelphia	P Sloane	42	113				1	1	100
Pennsylvania Hospital Department of Mental and Nervous Diseases [1] [68]	Philadelphia	L H Smith	596		16		1	7	2	167
Philadelphia General Hospital*[1]	Philadelphia	J Stouffer	1 922		87	31	3	6	3	75
Philadelphia Psychiatric Hospital [1]	Philadelphia	N W Winkelman	483	1,517	5	1	5	6	2	100
Philadelphia State Hospital [1]	Philadelphia	G E. Peatick	6 718	704	285	46	6	12	2	378
Temple University Hospital*[1]	Philadelphia	O S. English	49	5 610				5	3	
St. Francis Hospital*[1]	Pittsburgh		3,245	423	97	44			2	
Western Psychiatric Institute and Clinic [1]	Pittsburgh	H W Brosin	329	471	6	1	8	18	3	272 50
Warren State Hospital [1]	Warren Pa	R. H Israel	3 603	279	266	12	5	11	2	357
Woodville State Hospital [1]	Woodville Pa	R J Phifer	3 067	88	188	23	4	4	1	357 50
State Hospital for Mental Diseases [1]	Howard R.I.	J F Regan	4,271	480	374	93	8	14	2	333
Butler Hospital [1]	Providence R I.	D G Wright	326	1 500	24	2	4	8	2	200
Charles V Chapin Hospital [1]	Providence R.I	T L. Greason	810	543	13	3	2	2	1	275
Gailor Memorial Psychiatric Hospital	Memphis								3	
Vanderbilt University Hospital*[1] [69]	Nashville Tenn	W F Orr	108	1 823	1				3	
Parkland Hospital*[1]	Dallas Texas	G Witt	339	904			2	2	2	
Timberlawn Sanitarium	Dallas Texas	G F Witt	562				3	6	2	200
University of Texas Medical Branch Hospitals										
Galveston State Psychopathic Hospital [1]	Galveston Texas	T H Harris	1 399		14	6	4	12	3	200
John Sealy Hospital*[1]	Galveston Texas	T H Harris	2 116	4 964	17	6	9	27	3	50
Salt Lake County General Hospital	Salt Lake City								2	
Vermont State Hospital [1]	Waterbury Vt	R. A. Chittick	1 838		134	35	2	4	2	330
University of Virginia Hospital*[1]	Charlottesville Va	D C Wilson	533	1 029	4	4	2	7	3	50
Medical College of Virginia—Hospital Division*[1]	Richmond Va	R. F Gayle Jr	635	3 131	6	2	1	3	3	46 50
Eastern State Hospital [1]	Williamsburg Va	G L. Jones	2 717		187	46	4	4	2	466
Western State Hospital [1]	Fort Steilacoom, Wash.	H H. Dutton	3 816		316	128		7	2	485
Eastern State Hospital [1]	Medical Lake Wash	R. H Southcombe	3 069	902	188	7	2	3	2	200
Pinel Foundation	Seattle Wash	W D Horton	134	12,567			2	2	1	350
State of Wisconsin General Hospital*[1]	Madison Wis	W J Bleckwenn	1 078	1 032	16	11	2	6	3	25
Milwaukee County Hospital for Mental Diseases [1]	Milwaukee	M. Kasak	1,831	284	23	15	3	9	2	100
Milwaukee Sanitarium [1]	Wauwatosa, Wis	J A Kindwall	637		8	5	1	2	1	
Queen s Hospital*[1]	Honolulu Hawaii	R. D Kepner	926	137	3	3	1	2	2	100
Territorial Hospital [1]	Honolulu Hawaii	M. Guensberg	1,587	1 295	65	29	4	4	1	600

24 PULMONARY DISEASES

The following services have been approved by the Council and the Subspecialty Board for Pulmonary Diseases of the American Board of Internal Medicine

Hospitals, 112 Assistant Residencies and Residencies, 398

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES ARMY									
Fitzsimons Army Hospital*	Denver Colo	C W Tempel	2 360	777	30	30			
FEDERAL SECURITY AGENCY									
Freedmen s Hospital*[1]	Washington D C	H. M Payne	166	7 512	51	24	1	3	
VETERANS ADMINISTRATION									
Veterans Admin Hospital*[1]	Long Beach Calif	J D Davis	1,659	3 484	56	50		4	
Veterans Admin Hospital	Hines Ill.	A Shamaskin	977		100	40			
Veterans Admin Hospital	Rutland Heights Mass.	S T Allison	1 091	1 193	58	38	1	1	
Veterans Admin Hospital	Minneapolis	W B Tucker	542	450	63	48			
Veterans Admin Hospital [1]	Excelsior Springs Mo	R K. Smith	511	722	18	11	3	3	
Veterans Admin. Hospital [1]	Albuquerque N M	C C Herbert	683		16	15	5	6	
Veteran Admin Hospital [1]	Castle Point N Y	C J Kaufman	1 157	439	70	49	4	4	
†Veterans Admin Hospital	Sunmount N Y	N D Esopo	566	83	22	14	8	24	

Numerical and other references will be found on page 462

24 PULMONARY DISEASES—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[a]	Total Residences Offered[a]	Beginning Stipend (Month)
Veterans Admin Hospital	Oteen N C	W S Schwartz	2 838	8 354	120	70	6	6	
Veterans Admin Hospital	Brecksville Ohio	C W Hobson	606	3 819	39	11	1	1	
Veterans Admin Hospital	Memphis								
Veterans Admin. Hospital*[1] [78]	Houston	D I Jenkins	428		30	25	2	4	
Veterans Admin Hospital*[1]	McKinney Texas	D O Shields	382	357	29	10	8	9	
Veterans Admin Hospital*	Richmond Va	W F Rovo	503		32	15	1	4	
Veterans Admin Hospital	Walla Walla Wash	I S Arany	600	222	24	21	1	1	
Veterans Admin Hospital[1]	Milwaukee	R A Hemphill	471	714	55	42	1	1	
NONFEDERAL									
Los Angeles Sanatorium[1]	Duarte Calif	A F T Rogers	432		28	13	1	1	200
Arroyo Del Valle Sanatorium[1]	Livermore Calif	J T Duncan	518	1 026	8		1	3	291
Barlow Sanatorium[1]	Los Angeles	H W Bosworth	203	2 420	1		2	2	100
Bret Harte Sanatorium[1]	Murphys Calif	L M Barber	650	8 140	44	18	1	1	420
Olive View Sanatorium[1]	Olive View Calif	C E Babcock	2,206		130	61	14	14	464
San Diego County General Hospital*[1]	San Diego Calif	R A Schneiders	282	2 324	42	12	1	3	125
San Francisco Hospital*[1]	San Francisco	S M Farber and H C Hinshaw					2	5	175
Santa Clara County Hospital*[1]	San Jose Calif	C Janne	180	10 100	39	16	1	3	235
Fairmont Hospital of Alameda County[1]	San Leandro Calif	J J Eaton	444	2 649	40	8	1	1	145
Tulare Kings Counties Joint Tuberculosis Hospital[1]	Springville Calif	W A Winn	342	9 298	11	4	1	3	450
National Jewish Hospital[1]	Denver	A Hurst	530	410	20	15	3	3	150
Norwich State Tuberculosis Sanatorium[1]	Norwich Conn	G C Wilson	745	2 443	47	11	1	1	260
Laurel Heights State Tuberculosis Sanatorium[1]	Shelton Conn	E J Lynch	455	2,509	18	7	2	2	205
Gaylord Farm Sanatorium[1]	Wallingford Conn	W H Morriss	298	3 000					250
Tuberculosis Sanatorium (Glendale Md P O)	Washington D C	D I Finucane	1 082		128	62		5	200
City of Chicago Municipal Tuberculosis Sanitarium[1]	Chicago	M R Lichtenstein	2 257	135 384	204	87	6	6	125
University of Chicago Clinics*[1]	Chicago			1 950					
Peoria Municipal Tuberculosis Sanitorium[1]	Peoria Ill	D Morse	170	2 023	15	11	1	1	250
Rockford Municipal Tuberculosis Sanatorium[1]	Rockford Ill	W J Bryan	228	3 754	17	5	1	1	250
Lake County Tuberculosis Sanatorium[1]	Waukegan Ill	C K Petter	296	6 500	22	16	1	1	200
Boehne Tuberculosis Hospital[1]	Evansville Ind	P D Crimm	375	678	38	38	1	1	350
Indianapolis General Hospital*[1]	Indianapolis	W S Tucker	200	2 412	38	4	1	1	80
Sunnyside Sanatorium[1]	Indianapolis	I I Jennings	372	1 825	30	13	2	2	300
Healthwin Hospital[1]	South Bend Ind	E W Custer	330	1 531	32	3			300
State Sanatorium[1]	Oakdale Ia	W M Spear	744	3 053	44	10	2	2	100
Waverly Hills Sanatorium[1]	Waverly Hills Ky	A. B Mullen	776	2 446	87	7	2	2	90
Charity Hospital of Louisiana*[1]	New Orleans	J L Wilson and I Hull	861	9 710	138	42	4	6	100
Western Maine Sanatorium	Greenwood Mt Me	I Adams	256	776	15	3	1	3	188 60
Baltimore City Hospital *[1]	Baltimore	H A Langeluttig	642		83	40	1	3	15
Boston Sanatorium	Boston	J A Foley	613		91	14		4	200
Fall River General Hospital	Fall River, Mass								
Middlesex County Sanatorium[1]	Waltham Mass	I P Dawson	630	18 774	51	27	1	2	370
Westfield State Sanatorium[1]	Westfield Mass	W W Knowlton	261	4 460	15	6		3	395 64
Belmont Hospital[1]	Worcester Mass	H K Spangler	244	4 110	24	12	1	2	155
American Legion Hospital[1]	Battle Creek Mich.	J F Moody	534	390	41		1	1	
Herman Kiefer Hospital[1]	Detroit	P T Chapman	1 833	58 148	175	94	[illegible]	10	397
Michigan State Sanatorium[1]	Howell Mich	W I Fidler	633	1 827	31		6	6	660
Ingham Sanatorium	Lansing Mich	C J Stringer	523	17 425	24	9	1	2	400
Morgan Heights Sanatorium[1]	Marquette Mich	J R Acocks	152	3 975	7	2	1	1	300
William H Maybury Sanatorium[1]	Northville Mich	W I Howard	1 568		149	60	3	3	384
Oakland County Tuberculosis Sanatorium[1]	Pontiac Mich	C P Melius	414	2,505	13	12	4	4	350
Nopeming Sanatorium[1]	Nopeming Minn	C A Hedberg	662	6,323	26	16			
Glen Lake Sanatorium[1]	Oak Terrace Minn	R H Frost	694	35,531	70	39			195
Mississippi State Tuberculosis Sanatorium	Sanatorium Miss	H Boswell	870	2 125	37	2	3	3	[illegible]00
Kansas City Municipal Tuberculosis Hospital	Kansas City Mo		440	30	70	18	1	1	170
Robert Koch Hospital[1]	Koch Mo	C D Kettelkamp	1 012		111	17	9	9	207 60
St. Mary s Group of Hospitals*[1]	St Louis	P Murphy	295	2 616	16	4	1	1	35
New Jersey Sanatorium for Tuberculous Diseases	Glen Gardner, N J	J A Smith	527	2 479	16	7	8	8	375
Berthold S Pollak Hospital for Chest Diseases[1]	Jersey City N J	S Cohen and B Lotter	938	5,332	138	28	6	8	166 60
Bergen Pines Bergen County Hospital	Ridgewood N J	R R Little	320	12,339	52	14	3	3	
Essex County Sanatorium[1]	Verona N J	A M Hicks	752	2 330	92	22	6	6	267 50
Albany Hospital*	Albany N Y	R J Erickson	280	1,936	32	12	1	1	50
Montefiore Hospital Country Sanatorium[1]	Bedford Hills N Y	S Rothbard	437		1	1	4	4	100
Kings County Hospital*[1]	Brooklyn	C F Hamilton	1 406	9,225	103	24	4	4	
Kingston Avenue Hospital[1]	Brooklyn	I Kaufman	447		51	8	4	4	130
Edward J Meyer Memorial Hospital*[1]	Buffalo	H C Dayman	689	1 187	114	35		1	100
Nassau County Tuberculosis Hospital[1]	Farmingdale N Y	J C Walsh	502	12 194	42	21	5	5	
Hermann M Biggs Memorial Hospital[1]	Ithaca N Y	N S Lincoln	479	9 179	20	4	2	3	250
Triboro Hospital[1]	Jamaica N Y	R H Bennett	1,328	9 989	108	42	12	12	130
Niagara Sanatorium[1]	Lockport N Y	A N Aitken	322	5,320	29	18	2	2	258 33
Bellevue Hospital Div I Columbia University*[1]	New York City	J B Amberson	3 185	8 508	229	50	19	22	60
Lenox Hill Hospital*	New York City	G Thorburn		1 042			1	1	50
Manhatten General Hospital	New York City								
Metropolitan Hospital*[1]	New York City	G C Ornstein	730	6 670	128	15	5	5	130
Montefiore Hospital for Chronic Diseases*[1]	New York City	S Rothbard	377	2,223	27	15	3	4	60
Morrisania City Hospital*[1]	New York City	F H Rubin		4 433			1	1	130
St Joseph s Hospital for Chest Diseases	New York City	F J McCarthy	652		28	8	3	4	175
Seton Hospital[1]	New York City	F H Rubin	809	314	55	23	10	10	130
Willard Parker Hospital[1]	New York City	H Alexander	246		11	3	2	2	180
Homer Folks Tuberculosis Hospital[1]	Oneonta N Y	R Horton	337	7 892	33	15	2	3	385
Municipal Sanatorium[1]	Otisville N Y	J S Edlin	1 195		8	4	7	7	160
Ray Brook State Tuberculosis Hospital[1]	Ray Brook N Y	I Beck	580	5 454	13	8	3	3	350
Iola Monroe County Tuberculosis Sanatorium[1]	Rochester N Y	J M MacMillan	681	18 238	77	44		[illegible]	283 33
Schenectady County Tuberculosis Hospital[1]	Schenectady N Y	J M Blake	251	3,289	23	6	2	2	200
Sea View Hospital[1]	Staten Island N Y	C C Ornstein	3 404	708	382	55	20	20	140
Trudeau Sanatorium[1]	Trudeau N Y	C M Meade	355		5	3	2	2	50
Grasslands Hospital*[1]	Valhalla N Y	W C Childress	504	2 721	54	21	2	[illegible]	16[illegible]
Duke Hospital*	Durham N C	L L Menefee Jr	3[illegible]4	657	9	7	1	1	[illegible]00
North Carolina Sanatorium for the Treatment of Tuberculosis	McCain N C	J S Hiatt	1 164	2 605	126	30	2	2	
Dunham Hospital	Cincinnati	J H Skavlem	935	2 725	78	20		2	305
City Hospital*[1]	Cleveland	R C McKay	945		105	40		7	416
Benjamin Franklin Hospital[1]	Columbus Ohio	W L Potts	624	16 [illegible]90	70	37	3	6	35[illegible]
Sunny Acres Cuyahoga County Tuberculosis Hospital[1]	Warrensville Ohio	H C Curtis	777	55,930	37	15	2	2	250
Mahoning Tuberculosis Sanatorium[1]	Youngstown Ohio	H H Teitelbaum	331	1 745	44	20	1	[illegible]	
Eagleville Sanatorium for Consumptives[1]	Eagleville Pa	L Cohen	316	8 480	11	3			
Pennsylvania State Sanatorium for Tuberculosis No 3	Hamburg Pa	A R Judd and C L Brown	843	251	93	23		2	322 30
Jefferson Medical College Hospital*	Philadelphia Pa								

Numerical and other references will be found on page 462

24 PULMONARY DISEASES—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[§]	Total Residences Offered[§]	Beginning Stipend (Month)
Philadelphia General Hospital*[1]	Philadelphia	N Ralph	1 102		277	98	1	2	75
Tuberculosis League Hospital[1]	Pittsburgh	C H Marcy	333	13 551	20	1	1	2	200
Oakville Memorial Sanatorium[1]	Oakville Tenn	J Mulhern	530	159,305	86	15	2	[illegible]	200
Firland Sanatorium[1]	Seattle Wash	R Davies	1 921	2 966	67	51	3	3	180
Muirdale Sanatorium[1]	Milwaukee	A V Cadden	1 056	866	78	20	1	1	227 20
Wisconsin State Sanatorium[1]	Statesan Wis	E F White	243		9	6	1	1	147 50
Leahi Hospital[1]	Honolulu T H	H H Walker	972	2 500	50	19	3	3	[illegible]

25 RADIOLOGY

The following services are approved by the Council and the American Board of Radiology As indicated in the column Type of Training approval has been extended in diagnostic roentgenology (D R) roentgenology (Roent), including diagnostic and therapeutic, therapeutic radiology (Ther Rad), and radiology (Rad), including roentgenology and therapeutic radiology

Hospitals, 370 Assistant Residencies and Residencies 1143

Name of Hospital	Location	Chief of Service	Type of Training	Number of X ray Examinations	Number of Deep X ray Treatments	Number of Superficial X ray Treatments	Number of Radium Treatments	First Year Residences Offered[§]	Total Residences Offered[§]	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY											
Letterman Army Hospital*	San Francisco Calif	E A Lodmell	Roent	42 946	3 064	812	24			3	
Fitzsimons Army Hospital*	Denver Colo	F Y Leaver	Roent	49 105	8 492	935	48	1	6	3	
Army Medical Center*[27]	Washington D C	H L Amory	Rad	66 267	8 013	5 368	295	2	6	3	
Brooke Army Center*[28]	San Antonio Tex	C A Craig	D R	67 352	3 902	193	113			3	
Tripler Army Hospital*	Honolulu T H	A O Haff	Roent	45 310	416	700	1			3	
UNITED STATES NAVY											
U S Naval Hospital*	Oakland Calif	O F Bentel	Roent.	35 769	1 897	647	2		2	1	
U S Naval Hospital*	San Diego Calif	R. C Douthat	Rad.	53 406			178	[illegible]	2	3	
U S. Naval Hospital*	Great Lakes, Ill	K H Vinnedge	D R	19 338	661	330				1	
U S Naval Hospital*[1]	Bethesda, Md	M W Mason	Roent	23,340	1 683	164	15	2	[illegible]	2	
U S. Naval Hospital*[1]	Chelsea Mass	A H Staderman	Roent	19 832	1 790	97	10	1	2	2	
U S Naval Hospital*[1]	St. Albans N Y	S F Williams	Roent	20,520	1 464	589				3	
U S. Naval Hospital*	Philadelphia	L Gartenlaub	Roent	4 076	3 251	255				2	
UNITED STATES PUBLIC HEALTH SERVICE											
U S. Public Health Service Hospital*[1]	New Orleans La	A Mayoral	D R	29 050	290			1	2	2	
U S. Public Health Service Hospital*[1]	Baltimore Md	E. K. Reid	Ther Rad Rad	38 000	3 786	665	66	1	3	1	
U S Public Health Service Hospital*[1]	Staten Island N Y	W M Sennott	Roent	35 098	2,278	508	10	1	3		
FEDERAL SECURITY AGENCY											
Freedmen's Hospital*[1]	Washington D C	C W Kelley	Rad	16 180	84	100	96		2	3	
VETERANS ADMINISTRATION											
Veterans Admin Hospital[1]	Tuskegee Ala	J J Peters	D R	10 515				1	1	3	
Veterans Admin Hospital*[1]	Long Beach Calif	F Isaac	Roent	101 060	2,346	1,570		3	6	2	
Veterans Admin. Hospital*[1]	Los Angeles	C W McClanahan	Rad.	67 487	12 266	3 002	95	[illegible]	7	3	
Veterans Admin. Hospital[1]	San Francisco	W W Saunders	D R	16 995	3 029	236	10	1	3	1	
Veterans Admin. Hospital[1]	Fort Logan Colo	C F Ingersoll	D R.	10 131	3 492	935	48	3	6	1	
Veterans Admin. Hospital*	Newington Conn	A B Skorneck	D R	14 760				1	2	2	
Veterans Admin. Hospital[1]	Washington, D C	S R Bersack	Roent	12 097	1 845	279	32		3	2	
Veterans Admin Hospital*[1]	Chamblee Ga	A E Willis	Roent	2,830	6,342	757	12	1	3	2	
Veterans Admin. Hospital	Hines Ill	F L. Hussey	Rad	70 992	20,230	1 671	306		12	3	
Veterans Admin. Hospital[1]	Indianapolis	M M Manalan	Roent	16 879	2,200	235	20	2	4	2	
Veterans Admin. Hospital[1]	Des Moines Ia	P J Trier	Roent.	30 991	2 079	421	2		1	2	
Veterans Admin. Hospital[1]	Wadsworth Kan	A Wolkin	D R	34,277	2 154	225	5	[illegible]	6	1	
Veterans Admin Hospital[1]	Louisville Ky		See University of Louisville Hospitals								
Veterans Admin. Hospital	New Orleans La	C P Oderr	D R	24,500	1 702	311	5	2	4	2	
Veterans Admin. Hospital[1]	Fort Howard Md	J T Brackin Jr	D R	13 702	1 422	25			2	1	
Veterans Admin. Hospital	Boston (West Roxbury)	E Wissing	Roent	17 117	5,206	322	6	2	2	2	
Veterans Admin Hospital[1]	Framingham Mass	D Kornblum	D R	23 400		100		3	3	1	
Veterans Admin Hospital[1]	Dearborn Mich	E E Levine	Roent	35,205	4 035	504	1		4	2	
Veterans Admin Hospital[1]	Minneapolis	B J O Loughlin	Roent	39 191	3 948	1 140	82	6	6	3	
Veterans Admin Hospital[1]	Jefferson Barracks, Mo	S Kamberg	Roent	24 751	4,383	413	90	1	5	1	
Veterans Admin. Hospital[1]	Brooklyn	W Schlein	D R.	16,557		1 638		1	3	1	
Veterans Admin. Hospital[1]	New York City	H G Jacobson	Rad	82 893	12 990	1 058	20	3	7	3	
Veterans Admin. Hospital[1]	Cleveland	M D Sachs	Rad	35 259	5 164	807	18	2	6	3	
Veterans Admin. Hospital	Dayton Ohio	F C Barald	D R	37 875	1 042	55	11	1	1	1	
Veterans Admin. Hospital*[1]	Oklahoma City	S M Classer	D R	7 100		30		1	1	1	
Veterans Admin. Hospital	Portland Ore	K Hardesty	Roent	70 590	4 941	348	6		1	3	
Veterans Admin Hospital[1]	Aspinwall, Pa	C H Alexander	Roent	22 464	5 978	394	5		5	3	
Veterans Admin. Hospital	Columbia S C		D R							1	
Veterans Admin Hospital[1]	Memphis Tenn	W H Mendel	Rad	63,595	4 080	416	48	2	6	2	
Veterans Admin Hospital*	Nashville Tenn	K R Deibert	Roent	41 607	2 982	310	23	[illegible]	4	2	
Veterans Admin Hospital[1]	Dallas, Tex	J J Sazama	Rad	14 338	1 809	192	32	1	3	3	
Veterans Admin Hospital*[1]	McKinney Tex	B K Lovell	Rad	28,539	3 896	601	71	2	3	2	
Veterans Admin Hospital*	Salt Lake City Utah		See University of Utah Affiliated Hospitals								
Veterans Admin Hospital	White River Jet. Vt	N W Loud	Roent	32 495	862	60	2	1	2	1	
Veterans Admin Hospital*[1]	Richmond Va	S. Richman	Roent	29,201	3 195	958	1	1	3	2	
Veterans Admin Hospital[1]	Milwaukee	T J Pfeffer	Roent	38 180	2,532	338	15	3	3	1	
NONFEDERAL											
Jefferson Hillman Hospital*	Birmingham Ala	B M Carter	Rad	26 512	0 310	563	94	1	3	3	50
Memorial Hospital*[1]	Phoenix, Ariz	D Gain	D R	6,558		1,372	11	1	1	1	200
University Hospital*[1]	Little Rock Ark	I Meschan	Rad.	22,655	8 659	2 731	74	2	8	3	75
San Joaquin General Hospital*[1]	French Camp Calif	A M Cove	Rad	34 735		2 607	44	1	1	2	220
General Hospital of Fresno County*[1]	Fresno Calif	C L. Ould	D R	16,598	2 759	500	18	1	1	1	206
Seaside Memorial Hospital*[1]	Long Beach Calif	H J Prichard	Rad	10 711	5 414		37	1	1	3	150
Cedars of Lebanon Hospital*[1]	Los Angeles	F Freedman and H L. Jaffee	Rad	18 190			61	3	3	3	75
Hospital of the Good Samaritan*[1]	Los Angeles	R T Taylor	Rad.	17 677	4 478	164	38	1	2	2	150
Los Angeles County Hospital*[1]	Los Angeles	R A. Carter	Rad.	81 998	7 001	2 334	520	8	8	3	165
Queen of Angels Hospital*[1]	Los Angeles	L. S. Gom	Rad.	10,609		4,808	45	1	3	2	100

Numerical and other references will be found on page 462

25 RADIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Type of Training	Number of X-ray Examinations	Number of Deep X-ray Treatments	Number of Superficial X-ray Treatments	Number of Radium Treatments	First Year Residences Offered	Total Residences offered	Length of Approved Program (Years)	Beginning Stipend (Month)
St Vincent's Hospital*[1]	Los Angeles	K S Davis	Rad	9 543	1 387		31		1	2	100
White Memorial Hospital*[1]	Los Angeles	W L Stilson	Rad	12 027	3 876	960	175		4	3	170
Highland Alameda County Hospital*[1]	Oakland Calif	H H Jensen	Rad	16,436			37	1	2	3	115
Collis P and Howard Huntington Memorial Hospital*	Pasadena Calif	R S Harrison	D R	17 439		1 711			1	2	130
Sutter General Hospital	Sacramento Calif		Rad							2	
San Diego County General Hospital*[1]	San Diego, Calif	E Whitehead	Rad	21 608	2 102	346	73	1	1	2	125
Children's Hospital*[1]	San Francisco	G G King	Roent	8 653	1 723	100	26	1	1	1	50
Franklin Hospital*[1]	San Francisco	A J Williams	Roent	11 401			3	1	1	1	100
St Francis Hospital	San Francisco	A A DeLorimier	Roent	17 752			58	1	2	1	210
St Mary's Hospital*[1]	San Francisco	C S Capp	Roent	12 100	1,515	385	7	1	1	1	100
Stanford University Hospitals*[1]	San Francisco	H S Kaplan	Rad	14 065	3 745	900	50	1	4	3	50
University of California Hospital*[1] [85]	San Francisco	R S Stone	Rad	23 966	6 113	6 140	117		4	3	75
Santa Barbara Cottage Hospital*[1]	Santa Barbara Calif	M J Goyman	Rad	6 561	2,359	456	16	1	3	3	100
Santa Monica Hospital[1]	Santa Monica Calif	R L Smith	Roent	2 065	6 014	900	25			2	
Glockner-Penrose Hospital*[1]	Colorado Springs Colo	J A Del Regato and J W McMullen	Ther Rad	12 123	5,891	625		1	2	1	100
St Francis Hospital and Sanatorium[1]	Colorado Springs Colo	V L Bolton	D R	5 003	2 343	2 758	11	1	1	2	210
Presbyterian Hospital*[1]	Denver	K D A Allen	Roent	7 581			32	1	1	3	65
St Luke's Hospital*[1]	Denver	W P Stampfli	Roent	8 126	1 900	133	9	1	1	2	100
University of Colorado Medical Center											
Colorado General Hospital*[1]	Denver	R R Lanier	Roent	28 698	3 144		102	2	5	3	75
Denver General Hospital*[1]	Denver	E Salzman	D R	27 005	723		5	1	2	1	75
Bridgeport Hospital*[1]	Bridgeport Conn	B M Parmelee	Rad	6 729	991		95	1	1	2	100
Hartford Hospital*[1]	Hartford Conn	D J Roberts and R T Ogden	Rad	28 054	5 536	5 536	57	1	3	3	50
Grace New Haven Community Hospital											
Grace Unit*[1]	New Haven Conn	R M Lowman	Roent	11 407		4 124	25	1	2	2	40
New Haven Unit (University Service)*[1]	New Haven Conn	A H Janzen	Roent	33 904		4 282	203	2	4	3	40
Hospital of St. Raphael*[1]	New Haven Conn	R Shapiro	Roent	10,533	1 356	201	69	1	3	2	75
Waterbury Hospital*[1]	Waterbury Conn	S Blank	Roent	11 447	1 872			1	1	1	100
Delaware Hospital*[1]	Wilmington Del	W M Lattomus	D R	38 107	3 840	880	132	1	1	2	130
Central Dispensary and Emergency Hospital*	Washington D C	J E Wissler	Rad	12 775	2 525	10	26	2	2	3	125
Doctor's Hospital*[1]	Washington D C	A C Christie	Rad	20 571	8 307	1 830	107	2	6	3	125
Garfield Memorial Hospital*[1]	Washington D C	A O Hampton	Rad	13 437		4 964	10	1	4	3	75
Georgetown University Hospital*[1]	Washington D C	W F Baensch	Rad	17 588	3 859	228	13	4	6	3	75
George Washington University Hospital*[1]	Washington D C	W W Stanbro	Roent	14 814	4,532	238	52		4	3	130
Jackson Memorial Hospital*[1]	Miami Fla	H E Davis	Rad	29 042	4 775		62	2	4	2	60
Crawford W Long Memorial Hospital*	Atlanta Ga	J D King and W F Lake	Rad	11 798	1 078	550	90	1	1	1	75
Grady Memorial Hospital*[1]	Atlanta Ga	H S Weens	Rad	39 330	5 466	1 995	50	2	6	3	20
Piedmont Hospital*	Atlanta Ga	G Hrdlicka	D R	5 391	653			1	1	1	90
University Hospital*[1]	Augusta Ga	L P Holmes	Roent	22 238	2,591	175	218	3	9	3	40
Emory University Hospital*	Emory University Ga.	T F Leigh	Rad	12 112			118	2	3	3	50
Augustana Hospital*[1]	Chicago	D S Beilin	Roent	13 247	2 753			2	4	3	75
Cook County Hospital*[1]	Chicago	G M Landau	Rad	90 516	17 013	918	210		3	3	85
Franklin Boulevard Hospital[1] [18]	Chicago	J T Case and M Cutler	Ther Rad	633	2 894	146	2,585	2	2	1	100
Illinois Masonic Hospital*[1]	Chicago	J H Gilmore	Roent	13 140	1 076		10	1	2	1	50
Mercy Hospital*[1]	Chicago	W Furey	Rad	17 251	9 683	150	169	1	2	2	25
Michael Reese Hospital*[1]	Chicago	R A Arens and E Uhlmann	Rad	58 984	7 899		2 630	1	3	3	50
Mount Sinai Hospital*[1]	Chicago	J Arendt	Roent	16 150	4 013			2	3	2	75
Northwestern University Medical Center[70]											
Passavant Memorial Hospital*	Chicago	R B Lewis	Roent	11 412	756	2	25	2	4	3	
Presbyterian Hospital*	Chicago	F H Squire	Rad	45 749	3 623	2 339	47	2	4	3	25
Provident Hospital*[1]	Chicago	W P Quinn	Rad	5 243	2 373		23	1	3	3	50
Ravenswood Hospital*[1]	Chicago	D L Jenkinson	Roent	12 141	1 950	108			1	3	85
Research and Educational Hospitals*[1]	Chicago	R A Harvey	Rad	35 200	11 540		93	2	6	3	55
St Bernard's Hospital*	Chicago	B S Cushway and E K Lewis	Rad	8 737	2,366	336	249	1	2	2	250
St Luke's Hospital*[1]	Chicago	E I Jenkinson	Rad	32 707			35	3	6	3	100
University of Chicago Clinics*	Chicago	P C Hodges	Rad	28 727	11 772	2 100	125	2	8	3	25
Wesley Memorial Hospital*[1]	Chicago	A Cannon	Rad	34 291	2 812	185	67	2	4	3	25
Evanston Hospital*[1]	Evanston Ill	R G Willy	Rad	21,536	4 126	588	113	1	3	3	50
St. Francis Hospital*	Evanston Ill	A C Ledoux	Roent.	23 042	1 768	177	28	1	2	2	150
Little Company of Mary Hospital*[1]	Evergreen Park Ill	W W Furey	D R	28 707	1,389	1 470	38	1	1	1	100
St Francis Hospital*[1]	Peoria Ill	P R Dirkse	Roent	16 834	3 054	1 533	14		1	2	100
Clinic Hospital	Bluffton Ind	W S Tirman	Roent	19 168	2 029		41	1	2	2	200
Protestant Deaconess Hospital*	Evansville Ind	A A Hobbs Jr	Rad	8 560	3 071	82	33	1	1	1	
St. Joseph Hospital[1]	Fort Wayne Ind	C H Warfield	Roent	11 785	2 147	205		1	1	2	
St Margaret Hospital*	Hammond, Ind	J F Larrabee	D R	11 843	1 418	277	11	1	1	1	175
Indiana University Medical Center*[1]	Indianapolis	J A Campbell	Rad	26 843	10 752	108	202	3	7	3	150
Methodist Hospital*[1]	Indianapolis	H C Ochsner	Rad	32 874	3 623	3,816	48	1	3	3	260
St Elizabeth Hospital*[1]	La Fayette Ind	D C McClelland	Roent	8,380	1 082	440	75	1	3	2	150
Ball Memorial Hospital*[1]	Muncie Ind	B W Stocking	Roent	10 901	2 535	150	22	1	2	2	150
Iowa Methodist Hospital*[1]	Des Moines Ia	T A Burcham	Rad	8 728	796	88	40	1	2	3	100
University Hospitals*[1]	Iowa City	H D Kerr	Rad	61 866	17 651		170	2	6	3	50
University of Kansas Medical Center*[1]	Kansas City Kans	C Tice	Rad	68 383	6,530	1,255	154	2	4	3	100
Wesley Hospital*[1]	Wichita Kans	N C Nash	Rad	9,504	4,381		22	1	1	1	
Norton Memorial Infirmary*	Louisville Ky	J C Bell	Rad	8 048	2 587	205	17	1	1	1	100
St Joseph Infirmary*	Louisville Ky	S E Johnson	Rad	13 497	7 305	756	114	1	3	3	150
University of Louisville Hospitals			Rad							3	
Louisville General Hospital*[1]	Louisville Ky	F L Pirkey		33 097			36	1	4		45
Veterans Admin Hospital[1]	Louisville Ky	D Shapiro		31 242	2 933	140	120	1	3		
Baptist Hospital*[1]	Alexandria La	H O Barker	Rad	5 423	3 592		369	1	1	3	25
Charity Hospital of Louisiana*[1]	New Orleans	M Garcia	Rad	131 062	8,339	5 754	517	4	12	3	125
Ochsner Foundation Hospital*[1]	New Orleans	E H Little	Rad	71 887	4 792			1	3	3	125
Southern Baptist Hospital*[1]	New Orleans	L J Bristow Jr	Rad	16 635				1	3	3	17
Touro Infirmary*[1]	New Orleans	A R Payzant	Rad	20 009	3 016	262	42	1	3	3	60
Shreveport Charity Hospital*[1]	Shreveport La	G M Riley	Rad	22 797	11 012	1 098	106	1	3	3	100
Eastern Maine General Hospital*[1]	Bangor Me	H A Smith	Roent	12 368	3 906		14	1	1	2	100
Maine General Hospital*[1]	Portland Me	J Spencer	Rad	17 723	3,394	105	60	1	1	3	15
Baltimore City Hospitals*[1]	Baltimore	J DeCarlo Jr	D R	25 100			188	1	4	1	41 66
Johns Hopkins Hospital*[44]	Baltimore	R H Morgan	Rad	66 550	11,363		214		6	3	35
Sinai Hospital*[1]	Baltimore	J O Salik	Roent	14 191	1,357		36	1	3	1	40
Union Memorial Hospital*[1]	Baltimore	W B Firor	D R	11 209				1	1	1	
University Hospital*[1]	Baltimore	W L Kilby	Rad	37 910	5 634		221	2	4	3	
Beth Israel Hospital*[1]	Boston	S A Robins and F Fleischner	Roent	17,516	2,214	237	9	2	3	2	41 64

Numerical and other references will be found on page 462

25 RADIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Type of Training	Number of X ray Examinations	Number of Deep X ray Treatments	Number of Superficial X ray Treatments	Number of Radium Treatments	First Year Residences Offered§	Total Residences offered§	Length of Approved Program (Years)	Beginning Stipend (Month)
Boston City Hospital*1	Boston	M Ritvo	Rad	110 374			65		7	3	140
Children s Hospital*	Boston	E B D Neuhauser	Roent	22 783				2	2	2	42
Faulkner Hospital*	Boston	L E Hawes	Roent	7 155	785	85		1	1	2	100
Lahey Clinic	Boston	H F Hare	Rad	54 884	8 704	117	11	1	3	3	110
Massachusetts General Hospital*	Boston	L. L. Robbins	Rad	46 149	14 968	1,547	227	2	6	3	41 66
Massachusetts Memorial Hospital*1	Boston	G Levene	Roent	12 215	1 828	206	17	1	3	3	75
New England Center Hospital*1	Boston	A. Ettinger	Roent	26 082	505		127		2	2	100
New England Deaconess Hospital 1	Boston	J H Marks	Rad	18 993			75	1	3	3	150
Peter Bent Brigham Hospital*	Boston	M. C Sosman	Rad	23 777	2 677		8	2	9	3	40
St Elizabeth s Hospital*1	Boston	W A. Carey	D R	9,510			6	1	1	1	125
Cambridge City Hospital*1	Cambridge Mass	F W O Brien	Rad	11 949			6		2	1	125
Mount Auburn Hospital*1	Cambridge Mass	R. Schatzki	Roent	16 036	1 929	47	6	1	1	1	125
Lynn Hospital*1	Lynn Mass	H A Osgood	Roent	15 851	2 099	675	15	1	1	3	
Newton Wellesley Hospital*1	Newton Lower Falls Mass	C Liebman	Roent	11 881			12	1	2	1	100
Salem Hospital*1	Salem Mass	S A. Wilson	Roent	12 066			18	1	3	3	85
Memorial Hospital*1	Worcester Mass	W J Elliott	Roent	10 557	2 109	100	5	1	1	1	125
St Joseph s Mercy Hospital*1	Ann Arbor Mich	S W Donaldson	Rad	18 961	1 211	819	39	1	3	3	175
University Hospital*1	Ann Arbor Mich	F J Hodges	Rad	47 733	11 439	1 170	244	4	17	3	124
Leila Y Post Montgomery Hospital*1	Battle Creek Mich	S P Barden	Rad	8 971	1 222	229	32	1	1	3	
Children s Hospital 1	Detroit	W A. Evans	D R	20 433	30				1	1	100
City of Detroit Receiving Hospital*1	Detroit	L D Harris	D R	40 688				2	4	2	217
Grace Hospital*	Detroit	H A. Jarre	Rad.	28 790	6 108		31	1	3	3	225
Harper Hospital*1	Detroit	L. Reynolds	Rad	27 101	17 710		390	3	9	3	205
Henry Ford Hospital*1	Detroit	H P Doub	Rad	55 605	4 780	2 625	112	2	6	3	225
Herman Kiefer Hospital 1	Detroit	C C Birkelo	D R	62 075		84			1	1	309
Mt. Carmel Mercy Hospital*1	Detroit	J M Grace	Roent	22 041				1	3	2	125
Providence Hospital*1	Detroit	W A Irwin	Rad	20 858	3 499	170	160	1	3	3	200
Wayne County General Hospital and Infirmary *1	Eloise Mich	J Zbikowski	Rad.	23 510	2 679	136	21	1	2	1	252
Hurley Hospital*	Flint Mich	D R Limbach	Rad	28 165	5 636	1 203	119		2	3	164
Blodgett Memorial Hospital*	Grand Rapids Mich	H. C Jones	Roent	9 993		3 821	64	1	2	2	200
Butterworth Hospital*1	Grand Rapids, Mich	R J McCandless	Rad	18 353	2 453	160	72	1	3	1	125
Hackley Hospital*	Muskegon Mich	L E Holly	Rad	11 976	3 727		27	1	3	3	150
Northwestern Hospital*1	Minneapolis	C O Hansen	Rad.	9 637	9 848	559		1	3	3	200
Swedish Hospital*1	Minneapolis	G T Nordin and L C Idstrom	Rad	19 741	4 376	493	71	1	2	3	158
University of Minnesota Hospitals*1	Minneapolis	L Rigler	Rad	74 345	8 171	1 066	252	1	7	3	
Mayo Foundation	Rochester Minn	B R. Kirklin	Rad.					4	14	3	135
Charles T Miller Hospital 1	St. Paul Minn	H O Peterson	Rad	10 611		6 655			2	3	115
St Joseph s Hospital 1	St. Paul, Minn	J P Medelman	Roent	11 047			28	1	1	1	125
Kansas City General Hospital No 1*	Kansas City Mo	E H Stratemeier	Roent	24 245	2 058	381	48	1	3	2	75
Kansas City General Hospital No 2*	Kansas City Mo	I Lockwood	D R	18 201			8	1	1	3	
Menorah Hospital Medical Center*1	Kansas City Mo	D S Dann	Rad.	9 585	1,335	445	36	1	1	1	150
Research Hospital*1	Kansas City Mo	I Lockwood	Rad	57 024	11 344	1,260	1 283	1	3	3	150
St. Joseph Hospital*	Kansas City Mo	C E. Virden	Rad.	12 845			97			3	
St. Luke s Hospital*	Kansas City Mo	L A. Scarpellino	Roent.	10 175		1 646	25	1	2	2	150
Barnard Free Skin and Cancer Hospital	St Louis	E C Ernst	Ther Rad	1 505	6 660	761	161	1	1	1	125
Barnes Hospital*	St Louis	H Wilson	Rad.	57,250	11 394		258		8	3	
De Paul Hospital*	St. Louis	E. C Ernst	Rad	8 239	1 288	75	55	1	2	2	
Homer G Phillips Hospital*1	St Louis	W E Allen Jr	Rad.	22,347	105	25	70	2	2	3	132 50
Jewish Hospital*1	St Louis	P C Schnoebelen	Rad.	13 723	5 499	345	75		1	2	100
St Louis City Hospital*1	St. Louis	D Weir	Rad.	46 340		3 009	160	1	8	3	123
St. Luke s Hospital*	St. Louis	O C Zink	Roent.	8 633	1 736	100	130	1	1	3	200
St. Mary s Group of Hospitals*1	St Louis	L. Sante	Rad.	25 603	2 856	586	104	1	3	3	35
Creighton Memorial-St Joseph s Hospital*1	Omaha	J F Kelly Sr	Rad	30 497	3,350	253	35	1	3	3	100
Nebraska Methodist Hospital*1	Omaha	H B Hunt	Rad	8 280	4 490	911	91		1	3	175
University of Nebraska Hospital*1	Omaha	H B Hunt	Rad	10 359			3 777	1	4	3	125
Mary Hitchcock Memorial Hospital*1	Hanover N H	W C MacCarthy Jr	Rad.	16 090	2 175	739	106	1	3	3	183
Atlantic City Hospital*	Atlantic City N J	R A. Bradley	Roent	9 320	3 898	420	64	1	1	2	150
Cooper Hospital*1	Camden N J	P D Gilbert	Roent	20 739	6 946	463	50	1	1	1	83 33
Jersey City Hospital*1	Jersey City N J	H J Perlberg	Rad	38 576		11 584	210	2	4	2	35
Hospital of St. Barnabas and For Women and Children*1	Newark N J	P J Gianquinto	Roent.	6 916	2 434	349	21	1	2	2	100
Newark Beth Israel Hospital*	Newark N J	N J Furst	Rad	28 651	5,304		109	1	1	3	100
Orange Memorial Hospital*1	Orange N J	W H Seward	Roent.	15 868			40	1	1	1	100
Mercer Hospital*1	Trenton N J	M P Mains	Roent.	6 034	203		136	1	1	3	150
Albany Hospital*1	Albany N Y	J F Roach	Roent	24 949	3 157	62	130	1	3	2	50
Brooklyn Cancer Institute 1	Brooklyn	W E. Howes	Ther Rad	7 758	12 649	240	297		4	3	80
Brooklyn Hospital*1	Brooklyn	J H Wentworth	Rad.	12,323	1 872		86	1	3	3	25
Jewish Hospital*1	Brooklyn	M. G Wasch	Rad.	35 031	2 494	290	49		4	3	50
Kings County Hospital*1	Brooklyn	B Ehrenpreis	Rad	13 912	13 639	2 040	169	3	5	3	
Long Island College Hospital*	Brooklyn	A L. L Bell	Rad	19 092	2 720	666	93	1	3	3	25
Maimonides Hospital*1	Brooklyn	M Slobodkin	D R.	20 022	1,349		6	1	2	2	75
Methodist Hospital*1	Brooklyn	G C Cramp	Roent	12,305	1 005	153	40	1	2	2	25
Buffalo General Hospital*	Buffalo	G J Culver	Roent	22 980	6,298	632	124	1	1	3	25
Deaconess Hospital*1	Buffalo	R E Seibel	Roent.	14 725	1 992	205		1	3	2	125
Edward J Meyer Memorial Hospital*1	Buffalo	E G Eschner	Roent.	34 852	2 390	538	61	1	3	3	100
Roswell Park Memorial Institute 1	Buffalo	W T Murphy	Ther Rad.	7 406	11,693	3 567	512		3	3	272 50
Clifton Springs Sanitarium and Clinic 1	Clifton Springs N Y	G H Brown	D R	4 170	686		19	1	2	1	100
Meadowbrook Hospital*	Hempstead N Y	H R. Zatskin	Roent	11,240	4 856	24	50	1	2	1	135
Queens General Hospital*1	Jamaica N Y	I S Startz and L Goldman	Roent	32 431	4 958	1 323	66	2	4	3	80
Charles S Wilson Memorial Hospital*1	Johnson City N Y	B D Jay	Rad	15,379	1 731	340	75	1	2	2	150
Mount Vernon Hospital*1	Mount Vernon N Y	L. M Bond	Roent	9 450	705	776		1	1	2	125
New Rochelle Hospital*1	New Rochelle N Y	J F Miller	Rad	12 158	2 125	21	5	1	2	2	175
Bellevue Hospital Div III New York University *1	New York City	I L Kaplan	Ther Rad	135,322	10 582	608	578	15	15	2	60
Bellevue Hospital Div II New York University *1	New York City	L J Friedman	D R	135,322				10	10	1	60
Beth Israel Hospital*1	New York City	A J Bendick	Roent.	12 296	3 070	101	13	3	3	3	50
Bronx Hospital*1	New York City	W Snow	Roent.	13 725	2 036	374	10	1	2	2	75
Doctors Hospital 1	New York City	A. J Tillinghast	D R	5 907			115	1	1	1	200
Flower and Fifth Avenue Hospitals*1	New York City	F J Borrelli	Rad	14 153	2 438	220	20	2	3	3	
French Hospital*1	New York City	E M Claiborne	Roent	12 175	1,681			1	2	2	100
Goldwater Memorial Hospital*1	New York City	H K Taylor	D R	13 471	119	15		2	3	1	80
Harlem Hospital*1	New York City	W Snow	D R	66 631	4 857	1 700	67	2	2	2	80
Hospital for Joint Diseases*1	New York City	M M Pomeranz	Rad	22 047	1 656	259	10	1	3	3	40
Lenox Hill Hospital*	New York City	F H. Ghiselin	Roent	21 193	4 733	191	9	1	2	3	60
Lincoln Hospital*1	New York City	E. Kraft	Roent	27,255	714		14		2	2	

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25 RADIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Type of Training	Number of X-ray Examinations	Number of Deep X-ray Treatments	Number of Superficial X-ray Treatments	Number of Radium Treatments	First Year Residences Offered[3]	Total Residences offered[3]	Length of Approved Program (Years)	Beginning Stipend (Month)
Memorial Hospital[1]	New York City	R Sherman	Rad	39 687	40 769		518		9	2	80
Montefiore Hospital for Chronic Diseases*[1]	New York City	J Schwartzman and J R Fried	Rad	27 88,		6 903	36	4	6	3	80
Morrisania City Hospital*[1]	New York City	S F Weitzner	Rad	23 781	3 012	329	45	1	2	2	80
Mount Sinai Hospital*[1]	New York City	B S Wolf	Rad	43,680	7 941	11 799	58	6	6	3	50
New York City Hospital*[1]	New York City	A Bachman	D R	17 383		63		1	1	2	130
New York Hospital*[1]	New York City	R P Ball	Rad	71 859	8 170	1 782	160	5	9	3	25
New York Polyclinic Medical School and Hospital*[1]	New York City	W H Shehadi	Roent.	9 823	1 694	623	27	1	2	*	15
Presbyterian Hospital*[1]	New York City	R Golden	Rad.	81,302		18 761	161	4	12	3	108
Roosevelt Hospital*[1]	New York City	C Smith	Rad	20,883		3 250	129	1	3	3	
St. Luke's Hospital*[1]	New York City	H F Hempel	Rad	32 769	4,243	313	30	1	3	3	80
St. Vincent's Hospital*[1]	New York City	F F Ruzicka	Rad	25 889	2 122	10	37	1	9	1	80
Sydenham Hospital*[1]	New York City	J Moseley	Roent	7 776	137	24	10	1	1	1	110
University Hospital*	New York City	C Gottlieb	Rad	14 876			481	1	4	3	90
United Hospital*[1]	Port Chester N Y	T S West	Roent.	7 447	2 912		8	1	2	1	150
Genesee Hospital*[1]	Rochester N Y	C Baron	Rad.	19 202	1 825	321	12	1	1	1	42 50
Rochester General Hospital*[1]	Rochester N Y	F F Merrill	Roent	19 689	7 512		16	1	3	3	55
St Mary's Hospital*[1]	Rochester N Y	A V Winchell and H Forsyth	Roent	17 145		1 788	56	1	3	3	125
Strong Memorial Rochester Municipal Hospitals*[1] [71]	Rochester N Y	G H Ramsey	Rad.	24,326	4 291	1 005	200	3	9	3	41 [illegible]
Ellis Hospital*[1]	Schenectady N Y	K L Mitton	Roent	12 442	1,260		10	1	1	1	123
Sea View Hospital[1]	Staten Island N Y	A V Shapiro	D R	19 000				1	1	1	140
State University Medical Center											
Crouse Irving Hospital*[1]	Syracuse N Y	C F Potter	Roent.	7 022	525	75		1	1	2	125
Syracuse Memorial Hospital*[1]	Syracuse N Y	P A Riemenschneider	Rad	11 680			60		1	3	125
Grasslands Hospital*[1]	Valhalla N Y	A G Debbie	Roent.	17 883	1 543	1 411	17	1	3	3	125
Charlotte Memorial Hospital*[1]	Charlotte N C	W C A Sternbergh	Roent.	12 122	1 453	61	34	1	1	1	100
Duke Hospital*[1]	Durham N C	R J Reeves	Rad	101,291	10 096	1 072	32,	3	6	3	
Watts Hospital*[1]	Durham N C	W W Vaughan	Rad	14 619	4,805	6,381	78	1	9	3	50
North Carolina Baptist Hospital*[1]	Winston Salem N C	J R Andrews	Rad	18,881	2 695	121	29	2	4	3	41 66
Bismarck Hospital	Bismarck N D	H M Berg	Rad	22 263	2,630	900	53	2	6	3	300
City Hospital*[1]	Akron Ohio	F T Moore	Rad	44 533	10 875	413	97	1	3	3	140
Peoples Hospital*	Akron Ohio	E L Yoke	Rad	10 994			39	1	3	3	100
Aultman Hospital*[1]	Canton Ohio	S Larson	Rad	22 095			26	1	1	1	
Mercy Hospital*[1]	Canton Ohio	J J Douglas	D R	9 414	2,8	143	79	1	3	3	125
Cincinnati General Hospital*[1]	Cincinnati	B I Felson	Rad	37 910	7,615	416	72	5	7	3	
Good Samaritan Hospital*[1]	Cincinnati	J L McCarthy	Rad	19 794	3 147		91	1	3	2	155
Jewish Hospital*[1]	Cincinnati	A Fine	Rad	16,333	2 008	62	46	1	*	3	60
City Hospital*[1]	Cleveland	H Hauser	Rad	20 207	4,196	2 101	123	2	6	3	6,
Cleveland Clinic Hospital[1]	Cleveland	C R Hughes and U V Portmann	Rad	62 776	8 420	2 041	301	4	24	3	
Lutheran Hospital*[1]	Cleveland	J A Croh	Roent	9 183	3 690	56	12		1	3	50
Mount Sinai Hospital*[1]	Cleveland	H A Mahrer	Roent.	16 350			15	1	3	3	100
St Luke's Hospital*[1]	Cleveland	D D Brannan	Rad	25 359			40	1	3	3	100
St. Vincent Charity Hospital*[1]	Cleveland	J J O Malley	Rad	14 768	1 962		37	2	2	3	75
University Hospitals*[1]	Cleveland	H L Friedell	Rad	33 254	6 079	1,262	232	2	5	3	
Ohio State University Hospital*[1]	Columbus Ohio	H J Means	Rad	26 842			139	2	5	3	50
Miami Valley Hospital*[1]	Dayton Ohio	G A Nicoll	Rad	18 945	2 408		45	1	3	3	75
St. Elizabeth's Hospital*	Dayton Ohio	J G Tye	Rad.	11 311	1 040		10	1	1	3	250
St. Vincent's Hospital*[1]	Toledo Ohio	C F Hufford	D R	23 6,3			20	1	1	1	125
St. Elizabeth's Hospital*[1]	Youngstown Ohio	S T Tamarkin	Roent.	17 005	1 712	176	18	1	1	1	400
Youngstown Hospital*[1]	Youngstown Ohio	F C Baker	Rad.	15,213	6,698	1 197	38	1	2	3	75
University Hospitals*[1]	Oklahoma City	P I Russo	Rad	22 652	12 418	2 482		5	5	3	50
St. Vincent's Hospital*[1]	Portland Ore	S E Rees	Roent.	11 799	2 175		[illegible]	1	3	3	100
University of Oregon Medical School Hospitals and Clinics*[1]	Portland Ore	W Y Burton	Rad.	39 617	4 594		35	1	3	3	85
Abington Memorial Hospital*[1]	Abington Pa	J D Zulick	Roent.	16 835			61	1	2	3	50
Bryn Mawr Hospital*	Bryn Mawr Pa	R S Bromer	Rad.	15 870	4,607		114	2	2	3	80
George F Geisinger Memorial Hospital*[1]	Danville Pa	C L Hinkel	Rad	13 012	1 657	457	46	1	3	3	100
St. Vincent's Hospital*	Erie Pa		Rad	11 360	994	49	32			3	50
American Oncologic Hospital[1]	Philadelphia	S G Castigliano	Ther Rad	1 665	5 698	3	[illegible]	2	2	3	150
Episcopal Hospital*[1]	Philadelphia	D A Sampson	Rad	14 940	632	99	52	1	2	3	50
Frankford Hospital*[1]	Philadelphia	M T Woodruff	D R	9 356	318	60	24	1	1	1	200
Germantown Dispensary and Hospital*[1]	Philadelphia	B R Young	Rad.	17 100	2 600	700	50	1	3	3	50
Graduate Hospital of the Univ of Pennsylvania*[1]	Philadelphia	A Finkelstein	Rad	21 183				6	10	3	
Hahnemann Hospital*[1]	Philadelphia	J S Lehman	Rad	2, 698	2 934	178	495	2	5	3	50
Hospital of the University of Pennsylvania*[1]	Philadelphia	E P Pendergrass	Rad	110 001	20 600	4 224	316	7	21	3	
Hospital of the Woman's Medical College of Pennsylvania*[1]	Philadelphia	J H Vastine II	Roent.	8 134	1 388	22*	46	1	*	3	60
Jeanes Hospital[1]	Philadelphia	L Pendergrass	Ther Rad	3,510	1,250	188	8		1	2	110
Jefferson Medical College Hospital*[1]	Philadelphia	P C Swenson	Rad	53 143	8 001	7 000	691	14	14	3	
Jewish Hospital*[1]	Philadelphia	J Gershon-Cohen	Rad	21,500	3 638	703	53	3	3	3	100
Mercy Douglass Hospital*[1]	Philadelphia	R F Minton	D R	3,205		12					
Mount Sinai Hospital*[1]	Philadelphia	H J Isard	Rad	15 888	2 004	250	78	2	2	2	50
Nazareth Hospital*	Philadelphia	J S Fetter	Roent	13 230	1 060	584	20	1	1	2	100
Pennsylvania Hospital*	Philadelphia		Rad	15 611	2,209	369	117	1	*	3	20
Philadelphia General Hospital*[1]	Philadelphia	B P Widmann	Rad	36 033	9 651	369	100	3	8	3	75
Presbyterian Hospital*[1]	Philadelphia	E L Lame	Rad.	9 548	5 005	330	52	1	3	3	25
Temple University Hospital*[1]	Philadelphia	W L Chamberlain	Rad	33 993	5 697	83	99	4	19	3	50
Mercy Hospital*[1]	Pittsburgh	J A L McCullough.	Rad	27 950	6 045		180			3	100
Montefiore Hospital*[1]	Pittsburgh	M Goldsmith	Roent	10 693	2 604	216		2	2	3	50
St Francis Hospital*[1]	Pittsburgh		Roent	38 073	2 633	*3	33			3	
Pittsburgh Medical Center [76]	Pittsburgh	G W Crier	Rad	9 932	1 800					3	41 66
Western Pennsylvania Hospital*[1]	Pittsburgh	R G Alley	Rad	12 794	3,290	559	59		1	3	100
Reading Hospital*[1]	Reading Pa	C W Chamberlain	Rad	14 084			70		4	3	150
St Joseph's Hospital*	Reading Pa	W Werley	Roent	7 970	1 4,5	632	93	1	1	1	
Robert Packer Hospital*[1]	Sayre Pa	S P Perry	Rad	23 729	4,280	180	93		3	3	150
Sharon General Hospital	Sharon Pa	H A Steiner	Roent	9 456			30	0	1	1	250
Chester County Hospital	West Chester Pa	J Gershon Cohen	Roent	10 609	1 675	862	6	1	1	1	
Rhode Island Hospital*[1]	Providence R I	L A Martineau	Roent	27 968	3 101	897	88	1	2	3	60
Roger Williams General Hospital*	Providence R I	R R Hunt	Roent	9,351	1 900	925	81		1	*	200
Roper Hospital*[1]	Charleston S C	H B Petit	Roent	16 565	4 662	78	39	1	3	1	50
Columbia Hospital*[1]	Columbia S C	C W Smith Jr	Roent	26 156	4 058		32	1	1	1	125
Spartanburg General Hospital*[1]	Spartanburg S C	H E Plenge	Rad	8 757	2,597	365	63		1	*	400
Baptist Memorial Hospital*	Memphis	J L Whiteleather	Roent	13 627			313		1	3	75
John Gaston Hospital*	Memphis	D S Carroll	Rad	33 178	2 491	22	75		4	3	35
Methodist Hospital*	Memphis	J C King	Roent	17 775	4 022	959		1	3	3	75
Vanderbilt University Hospital*[1]	Nashville Tenn	C C McClure	Rad	18 913	2,297	143	68			3	35

Numerical and other references will be found on page 462

25 RADIOLOGY—Continued

Name of Hospital	Location	Chief of Service	Type of Training	Number of X ray Examinations	Number of Deep X ray Treatments	Number of Superficial X ray Treatments	Number of Radium Treatments	First Year Residences Offered[8]	Total Residences offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
Baylor University Hospital★[1]	Dallas Tex	J F Miller	Rad	12 314	5 088		89	2	6	3	50
Methodist Hospital★[1]	Dallas Tex	R H Millwee	D R	10,298	554	686	30	1	1	1	100
Parkland Hospital★[1]	Dallas Tex	R Clayton	Rad	23,533	1 542	50	121	1	3	3	
St Paul s Hospital★[1]	Dallas Tex	C D Carlson	Roent	5 747	1 941		2 013	1	1	1	100
University of Texas Medical Branch Hospitals★[1]											
John Sealy Hospital	Galveston Tex	J C Rude	Rad	52 840			87	2	6	3	50
Hermann Hospital★[1]	Houston Tex	I M Vaughan	Rad	26 067	4 003	237	42	2	2	1	75
M. D Anderson Hospital for Cancer Research [1]	Houston Tex	G Fletcher	Ther Rad.	5 744	12 889	3 840	235		4	1	150
Methodist Hospital★[1]	Houston Tex	C H Burge	Roent	7 490			13			1	
St Joseph s Infirmary★	Houston Tex	P F Wigby	Rad	27 389	3 490	10	79	1	3	3	150
Santa Rosa Hospital★	San Antonio Tex	M Davis	D R	10 347			1 307	1	1	1	150
Scott and White Memorial Hospital★[1]	Temple Tex	C A Stevenson	Rad	50 168	5 632	723		2	6	3	200
Wichita Falls Clinic Hospital★	Wichita Falls Tex	C D Wilson	Rad	13 450	2 047	1 399	11			1	
University of Utah Affiliated Hospitals[86]			Rad							3	
Dr W H Groves Latter Day Saints Hospital★	Salt Lake City	E H Crowder		6 829	680		54	1	3		100
Holy Cross Hospital★[1]	Salt Lake City	R M Meyer		5 485	6[illegible]1		22				100
Salt Lake County General Hospital★[1]	Salt Lake City	H Plenk		12 614	2 642	329	17		2		50
Veterans Admin Hospital★	Salt Lake City	H P Plenk and R M Crowder	D R	12 200				2	2		
Bishop de Goesbriand Hospital★[1]	Burlington Vt	F VanBuskirk	Roent	5 790	1 035			1	2	1	100
Mary Fletcher Hospital★[1]	Burlington Vt	A B Soule	Rad	11,511	3 263	103	87	1	3	3	50
University of Virginia Hospital★[1]	Charlottesville Va	V W Archer	Roent	33 184			98	2	6	3	50
De Paul Hospital★[1]	Norfolk Va	W H Whitmore	Roent	7 030				1	1	1	150
Norfolk General Hospital★[1]	Norfolk Va	P B Parsons and J L Frank	Rad	15,569	5 828	659	228	2	4	3	125
Medical College of Virginia—Hospital Division★[1]	Richmond Va	I B Mandeville	Rad	26,552	4 697	247	203	2	5	3	46 50
Swedish Hospital★[1]	Seattle Wash	S Cantril	Ther Rad	1,287	7 917	1 143	207	1	1	3	100
Virginia Mason Hospital★[1]	Seattle Wash	T Carlile	Rad	21 081	2 168	2 610	18	1	2	2	75
Sacred Heart Hospital★	Spokane Wash	M Harris	Rad	8,261			35	2	4	2	150
Methodist Hospital★	Madison, Wis.	W L Waskow	Roent	12 984	1 935	76	42	1	1	1	125
St. Mary s Hospital★	Madison Wis	C F Sherman	Roent	9 120				1	1	1	175
State of Wisconsin General Hospital★[1]	Madison Wis	E A Pohle and L W Paul	Rad	40 684	8 251	325	128	2	6	3	25
St. Joseph s Hospital★[1]	Marshfield Wis	J M Wickham	Rad.	3 194	518		13	1	3	3	300
Columbia Hospital★	Milwaukee	S A Morton	Rad	39 491			43	1	1	3	75
Evangelical Deaconess Hospital	Milwaukee	A M Melamed	Roent.	13 287		2 254	21	1	1	1	125
Milwaukee County Hospital★[1]	Milwaukee	J L Marks	D R	42 340	158	25	16	1	3	1	50
Milwaukee Hospital★[1]	Milwaukee	H W Hefke	Rad	22 149			140	1	1	3	125
St. Joseph s Hospital★	Milwaukee	A. Altenhofen	Roent	32 061			25	1	3	3	75
Queen s Hospital★[1]	Honolulu, T H	L L. Buzaid	Roent	7 121	2 505		4	1	2	2	100

26 SURGERY

The following services have been approved for four years of training by the Council, the American Board of Surgery and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery

Hospitals, 224 Assistant Residencies and Residencies 2294

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Beginning Stipend (Month)
UNITED STATES ARMY									
Letterman Army Hospital★	San Francisco Calif	W H Matuska	1,212	1,334	21	20			
Fitzsimons Army Hospital★	Denver	J H Forsee	2 006	2 639	60	58	5	12	
Army Medical Center★[27]	Washington D C	S F Seeley	1,345	6 699	13	12	4	13	
Brooke Army Medical Center★[28]	San Antonio Texas	J R Shaeffer	4,032	5 057	59	56			
UNITED STATES NAVY									
U S Naval Hospital★	Oakland Calif	E H Dickinson	1 630	600	36	35		7	
U S Naval Hospital★	San Diego Calif	T C Hays	3 376	8 098	74	67	8	8	
U S Naval Hospital★	Bethesda Md	H A Cross	1 919		40	30	4	5	
U S Naval Hospital★[1]	Chelsea Mass	C C Clegg	2 034	3 988	16	6	3	6	
U S Naval Hospital★[1]	St Albans N Y	H G Young	915	1 390	9	5			
U S Naval Hospital★	Philadelphia	L G Bell	3 173	7 391	48	27			
FEDERAL SECURITY AGENCY									
Freedmen s Hospital★[1]	Washington D C	J R Laurey	1 157	5 976	61	96	3	13	
VETERANS ADMINISTRATION									
Veterans Admin Hospital★[1]	Long Beach Calif	J Weinberg	2 830	7,322	36	34	4	10	
Veterans Admin Hospital★[1]	Los Angeles	J M Beal	3 019	2 991	33	21	10	21	
Veterans Admin Hospital	San Francisco	L. G Brizzolara	1,366	2 078	34	31	4	11	
Veterans Admin Hospital [1]	Fort Logan Colo	P M Ireland	976		20	17	6	12	
Veterans Admin. Hospital★	Newington Conn	A Hurwitz	2 013	5 986	12	11	7	12	
Veterans Admin. Hospital [1]	Washington D C	J C Lee	1 974	3 994	40	27		7	
Veterans Admin Hospital	Hines Ill	C B Puestow	6 576		88	57	6	52	
Veterans Admin Hospital [1]	Indianapolis	H L. Egbert	1 494		35	30	4	11	
Veterans Admin Hospital [1]	Des Moines Iowa	L T Palumbo	2 784	500	68	37	6	16	
Veterans Admin Hospital [1]	Louisville	J E Hamilton	2 465	11 685	103	68	6	16	
Veterans Admin Hospital	New Orleans La	L. K Richardson	1 698	753	53	31	4	10	
Veterans Admin Hospital [1]	Fort Howard Md	J M Miller	1,255	665	25	14	4	-	
Veterans Admin Hospital [1]	Perry Point Md	R T Shackelford	1,372		30	15	1	5	
Veterans Admin Hospital [1]	Boston (West Roxbury)	F Ross	1 714	4 404	43	42	4	10	
Veterans Admin Hospital [1]	Framingham Mass	H H Faxon	1 414	2 158	17	12	6	14	
Veterans Admin Hospital	Dearborn Mich	C S Bates	2 472	6 997	76	16		21	
Veterans Admin Hospital [1]	Minneapolis	L. J Hay	2 655	3 500	41	33	24	24	
Veterans Admin Hospital [1]	Jefferson Barracks Mo	K B Coldwater	1 598		60	31	4	10	
Veterans Admin Hospital [1]	Brooklyn	R Friedlander	1 688		42	30	6	18	
Veterans Admin Hospital [1]	New York City	P K Sauer	2 493	3 404	82	54	4	16	
Veterans Admin Hospital	Cleveland	C L. Coghill	1 863	825	41	27	9	17	
Veterans Admin Hospital	Dayton Ohio	L P Alt	2 447	1 869	147	87	7	17	
Veterans Admin Hospital★[1]	Oklahoma City	F A. Quenzer	1 417		26	16	6	6	

Numerical and other references will be found on page 462

26 SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered*	Total Residencies Offered*	Beginning Stipend (Month)
Veterans Admin. Hospital	Portland Ore	R. A Wise	1 545		17	12	4	16	
Veterans Admin. Hospital [1]	Aspinwall Pa	H Schwarz	1 872		42	27		15	
Veterans Admin Hospital	Memphis Tenn	R. F Bowers	4,328	6 517	56	41	10	21	
Veterans Admin. Hospital*	Nashville Tenn	R S McCleery	3 995		78	53	5	15	
Veterans Admin. Hospital [1]	Dallas Texas	L J Kleinsasser	1 476		47	31	3	7	
Veterans Admin. Hospital*[1]	Houston Texas	J P Heaney	1 421		45	41	5	12	
Veterans Admin Hospital*[1]	McKinney Texas	J P North	1 319		27	27	5	12	
Veterans Admin. Hospital*	Salt Lake City	J A. Gubler	1 223	2 457	17	15	3	9	
Veterans Admin. Hospital [1]	White River Jct Vt	W B Crandell	3,530	13 067	35	30	5	17	
Veterans Admin Hospital*[1]	Richmond Va	R F MacDonald	1 600		26	17	4	10	
Veterans Admin. Hospital [1]	Milwaukee	F Raine	1 314	631	50	42	14	14	
NONFEDERAL									
Jefferson Hillman Hospital*[1]	Birmingham Ala	C Lyons	2 830	9 952	93	44	3	10	50
Lloyd Noland Hospital*	Fairfield Ala	R A Hamrick	1 128	12 470	16	6	2	5	225
University Hospital*[1]	Little Rock Ark	G O Dean	1 004	10,539	43	21	5	20	75
Los Angeles County Hospital*[1]	Los Angeles	L A Alesen	4 883	14 195	308	94	12	12	165
Permanente Foundation Hospital*[1]	Oakland Calif	A. L Baritell	1 026	28 737	36	18	5	8	175
Franklin Hospital*[1]	San Francisco	T F Mullen	1,520	3 480	21	10	3	7	100
Mount Zion Hospital*[1]	San Francisco	F I Harris	1 100	1 451	32	23	2	8	75
San Francisco Hospital*[1]	San Francisco	L Goldman and C Mathewson					4	11	175
Stanford University Hospitals*[1]	San Francisco	E J Holman	2 330	12 032	47	24	4	0	50
University of California Hospital*[1]	San Francisco	H G Bell	1 418	9,564	35	25		9	75
University of Colorado Medical Center									
Colorado General Hospital*[1]	Denver	H Swan	832	2 414	51	43	2	7	75
Denver General Hospital*[1]	Denver	G D Ellis	1 408	5 348	129	10	2	6	75
Hartford Hospital*[1]	Hartford Conn	W A Standish	5 089	279	88	50	4	11	50
Grace-New Haven Community Hospital New Haven Unit (University Service)*[1]	New Haven Conn	G Lindskog	2 442	14 249	101	55	3	11	40
Delaware Hospital*	Wilmington Del	L J Jones	7,354	12,303	87	53	2	5	130
Central Dispensary and Emergency Hospital*[1]	Washington D C	J H Lyons	1,590	3 093	26	13	2	7	75
Gallinger Municipal Hospital*[1]	Washington D C	P A Reed	1,396	7 953	123	45	4	8	125
Georgetown University Hospital*[1] [35]	Washington D C	R J Coffey	3,575	6 426	61	32	6	23	25
George Washington University Hospital*[1]	Washington D C	B B Blades	1 121	1 558	4	3	2	9	130
Providence Hospital*[1]	Washington D C	L B Gaffney	2,219	3,508	13	6	1	3	75
Grady Memorial Hospital*[1]	Atlanta Ga	I Ferguson	4,506	48 955	254	92	12	28	20
University Hospital*[1]	Augusta Ga	J H Sherman	2 707	2,810	49	12	2	8	40
Cook County Hospital*[1]	Chicago	K A Meyer	17 055	21 277	1	123		23	32
Mercy Hospital*[1]	Chicago	H A Oberhelman	2,229	3 153	90	26	3	7	25
Michael Reese Hospital*[1]	Chicago	N N Crohn	2 640	4 313	31	17	3	8	25
Passavant Memorial Hospital*[1]	Chicago	L Davis	1 803	10 006	33	23	1	4	
Presbyterian Hospital*	Chicago	E M Miller	2 301	6 966	56	29	8	16	25
Research and Educational Hospitals*[1]	Chicago	W H Cole	933	13,307	20	19	2	5	55
St Luke's Hospital*[1]	Chicago	T L Hansen	3 391	8 151	88	50	6	14	25
University of Chicago Clinics*	Chicago	L R Dragstedt	2 072	18 517	65	47	6	8	25
Indiana University Medical Center*[1]	Indianapolis	H B Shumacker	1,205	5 250	64	46	5	13	150
University Hospitals*[1]	Iowa City	N Womack	2 690	2 518	74	56	5	22	50
University of Kansas Medical Center*	Kansas City Kans	P Schafer	1 151	3 990	58	44	3	6	100
Louisville General Hospital*[1]	Louisville Ky	R A Griswold	1 433	15 857	98	48	6	18	45
St Joseph Infirmary *	Louisville Ky	C H Maguire	1 952	270	46	18	1	4	150
Charity Hospital of Louisiana*[1]	New Orleans		7 941	55 453	343	141	8	29	25
*Shreveport Charity Hospital**[1]	Shreveport La	P D Abramson	2 189	2 803	96	44	4	14	60
Maine General Hospital*[1]	Portland Me	I M Webber	1 645	3 143	55	27	2	8	50
Baltimore City Hospitals*[1]	Baltimore	O C Brantigan	2 098	16 671	159	82	5	12	15
Church Home and Hospital*[1]	Baltimore	T S Cullen	3 604	1,281	45	23	2	7	75
Franklin Square Hospital*	Baltimore	H E Wilgis	2,322	3 005	35	9	1	6	125
Johns Hopkins Hospital*	Baltimore	A Blalock	3 725	20,223	117	89	13	24	41 66
Mercy Hospital*[1]	Baltimore	W D Wise	3 032	6 005	75	83	2	8	75
Sinai Hospital*[1]	Baltimore	H M Kern	2 716		46	25	3	7	35
Union Memorial Hospital*[1]	Baltimore	M T Finney Jr	4 691	6 753	88	49	4	9	40
University Hospital*[1]	Baltimore	C R Edwards	2,288	11 719	54	14	6	10	
Beth Israel Hospital*[1]	Boston	J Fine	2 975	4 504	60	31	5	9	41 66
Boston City Hospital*[1] [36]									
III Surgical Service (Boston University)	Boston	E E O Neil							
Massachusetts General Hospital*	Boston	E D Churchill	2 236	7 834	86	57	8	25	41 66
Massachusetts Memorial Hospital*	Boston	R H Smithwick	1 854	3,350	78	40	6	19	25
New England Center Hospital*[1] [36]	Boston	C S Welch	716		33	23		11	50
Peter Bent Brigham Hospital*[1]	Boston	F D Moore	2 804	22,907	103	75	6	18	
St. Vincent Hospital*	Worcester Mass	J C McCann	2,462		62	36	2	5	58 33
University Hospital*	Ann Arbor Mich	F A Coller	2 154	12 811	125	86	17	57	124
City of Detroit Receiving Hospital*[1]	Detroit	C G Johnston	3 609	16 133	231	108	6	18	217
Grace Hospital*	Detroit	*R P Reynolds*	8 696	5 434	188	79	4	4	225
Harper Hospital*[1]	Detroit	E A. Osius	4 075	3 066	89	44	7	13	205
Henry Ford Hospital*[1]	Detroit	R D McClure	8,531	145 881	147	83	26	63	225
Wayne County General Hospital and Infirmary*	Eloise Mich	W L. Sherman	2 705		219	70	4	10	252
Hurley Hospital*	Flint, Mich	A H Kretchmar	6 925		79	37		6	164
Butterworth Hospital*[1]	Grand Rapids Mich	M B Tidey	2 406	333	60	42	3	5	125
University of Minnesota Hospitals*[1]	Minneapolis	O H Wangensteen	1 010		107	79	4	34	
Ancker Hospital*[1]	St. Paul Minn	E M Jones	1 470	8 453	84	70	2	8	91 50
Barnes Hospital*	St. Louis	E A Graham	2 434	9 498	70	46	6	48	
Homer G Phillips Hospital*[1]	St Louis	R Elman	2 466	9 034	170	32	7	15	132
Jewish Hospital*[1]	St. Louis	J G Probstein	2 285	1,653	62	31		4	100
St. Louis City Hospital*[1]	St Louis	E Bricker and L V Mulligan	3 958	9,398	249	78	4	14	123 80
St. Mary's Group of Hospitals*[1]	St Louis	C R Hanlon	2 775	6 953	76	39	3	12	35
Albany Hospital*[1]	Albany N Y	E H Campbell	2,227	1 617	69	32	2	5	50
Brooklyn Hospital*[1]	Brooklyn	W H Field	2,903	5,884	45	15	4	8	25
Cumberland Hospital*[1]	Brooklyn	J J Gainey	3 163	23,330	106	32	2	5	60
Jewish Hospital*[1]	Brooklyn	H Louria and L. Berger	3 816	3 200	92	25	4	8	25
Kings County Hospital*[1]	Brooklyn	W Coakley and P Lear	11 515	51,504	671	130	4	12	
Long Island College Hospital*[1]	Brooklyn	E J Browder	2 616	8 895	60	20	3	6	25
Maimonides Hospital*[1]	Brooklyn	C B Ripstein	1,569	2 405	48	10	4	5	75
Buffalo General Hospital*	Buffalo	J R Paine	2 708	3 038	83	55	10	10	25
Edward J Meyer Memorial Hospital*[1]	Buffalo	J D Stewart	1 418	4 147	98	36	3	10	100
Millard Fillmore Hospital*[1]	Buffalo	H N Kenwell	3 272	34	30	14	2	6	50
Sisters of Charity Hospital*[1]	Buffalo	J C Brady	5 699	4,280	202	76	3	9	150
Meadowbrook Hospital*	Hempstead N Y	A. S Wanner	1 358		73	55	6	12	135
Queens General Hospital*[1]	Jamaica N Y	C L. Davidson	3,202	8 178	274	111	2	6	80
Nassau Hospital*[1]	Mineola N Y	O C Hudson	2 565		82	28	1	2	110

Numerical and other references will be found on page 462

26 SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Beginning Stipend (Month)
Bellevue Hospital Div II—Cornell University★[1]	New York City	C Holman	1 860	7 660	67	81	5	12	80
Bellevue Hospital Div III—New York University★[1]	New York City	J H Mulholland	2 929	4 237	117	41	5	15	80
Bellevue Hospital, Div IV—New York University Post Graduate Medical School★	New York City	J W Hinton	2 131	14 197	171	32	8	17	50
Beth Israel Hospital★[1]	New York City	L. Ginzburg	1 794	2,500	39	12	1	3	50
Flower and Fifth Avenue Hospitals★[1]	New York City	J M. Winfield	2,25?	5 403	20	3	5	11	
Goldwater Memorial Hospital★[1]	New York City								
II—Surgical Division		C W Cutler Jr	36?	47	67	20		2	80
III—Surgical Division		W H. Barber	551	1 425	81	16	1	4	80
Harlem Hospital★[1]	New York City	L. T Wright		30,205	161	29	4	4	80
Metropolitan Hospital★[1]	New York City	J M Winfield	1 922	9 780	103	23	3	5	80
Mount Sinai Hospital★[1]	New York City	R Colp and J H. Garlock	3 576	12 148	113	43	15	18	50
New York Hospital★[1, 84]	New York City	F Glenn	4 969	88 534	102	83	17	23	25
New York Polyclinic Medical School and Hospital★	New York City	R E Brennan	1 777	4,206	22	8	4	12	75
Presbyterian Hospital★[1]	New York City	C H Humphreys	3 029	45 754	120	54	8	28	208
Roosevelt Hospital★[1]	New York City	H W Cave and W C White	3 903		100	33	6	18	
St. Luke's Hospital★[1]	New York City	W F MacFee	3 954	18 731	91	46	4	10	60
St Vincent's Hospital★[1]	New York City	L M Rousselot	4 763	20 649	125	74	6	16	50
University Hospital★	New York City	J W Hinton	4 540	20 060	94	34		16	80
Genesee Hospital★[1]	Rochester N Y	S J Stabins	2 148	2 440	36	21	1	6	41 66
Strong Memorial Rochester Municipal Hospitals★[1]	Rochester N Y	J J Morton	6 243	11 589	152	125	9	20	41 66
State University Medical Center Hospital of the Good Shepherd★[1]	Syracuse N Y	A B Raffl	3 515		79	32	7	10	125
Duke Hospital★[1]	Durham N C	D Hart	2 568	9 966	40	17	11	22	
North Carolina Baptist Hospital★[1]	Winston Salem N C	H H Bradshaw	1 946	7 816	81	56	4	13	41 60
City Hospital★[1]	Akron Ohio	C C Pinkerton	2 089	962	65	21	4	11	140
Peoples Hospital★	Akron Ohio	S A Schlueter	1 689	997	18	11	3	10	125
Mercy Hospital★[1]	Canton Ohio	A W Warren	4,382	412	61	16	3	6	125
Cincinnati General Hospital★[1]	Cincinnati	B N Carter	2 943	24 714	306	147	5	17	
City Hospital★[1]	Cleveland	F A. Simeone	2 606	16 875	199	87	8	19	67
Cleveland Clinic Hospital [1]	Cleveland	R S Dinsmore	2 696	19 288	44	31	6	40	
Lutheran Hospital★[1]	Cleveland	J H Lazzari	3 447		57	26	6	10	85
Mount Sinai Hospital★[1]	Cleveland	S O Freedlander	4 091	8 277	68	21	2	6	100
St John's Hospital★[1]	Cleveland	W E Mishler	2 272	3 854	52	18	2	6	110
St Luke's Hospital★[1]	Cleveland	D M Glover	3 352	2 848	106	40	1	5	100
University Hospitals★[1]	Cleveland	W D Holden	4 454	9 655	125		11	21	
Ohio State University Hospital★[1]	Columbus Ohio	R M Zollinger	1 611	7 912	95	82	6	18	50
St Elizabeth's Hospital★[1]	Youngstown Ohio	L. G Coe	1 711	311	20	7	2	6	110
Youngstown Hospital★[1] [15]	Youngstown Ohio	A E Brant	9 643	620	109	68	1	9	125
University of Oregon Medical School Hospitals and Clinics★[1]	Portland Ore	W K. Livingston	1,305	6,220	66	48	2	8	85
Harrisburg Hospital★[1]	Harrisburg Pa	P A. Kunkel	3 515	18 050	89	38	1	4	
Germantown Dispensary and Hospital★[1]	Philadelphia	S D Weeder	2 706	2 978	94	30	1	3	50
Hahnemann Hospital★[1]	Philadelphia	W L. Martin	3 752	9 654	118	56	2	8	50
Hospital of the University of Pennsylvania★[1] [72]	Philadelphia	I S Ravdin	4 868	5 594	76	55	7	21	100
Jefferson Medical College Hospital★	Philadelphia	T A. Shallow and J H Gibbon	3 085	10 623	116	60	14	14	
Lankenau Hospital★[1]	Philadelphia	J M Deaver and G C Engel	2 745	12 072	76	41	6	6	50
Pennsylvania Hospital★	Philadelphia		1 884	10 327	70	39	2	7	20
Allegheny General Hospital★[1]	Pittsburgh	J C Burt	2 493	5 459	86	21		2	100
Pittsburgh Medical Center [76]	Pittsburgh	S P Harbison	2 036	2 888	33	12			41 66
Western Pennsylvania Hospital★[1]	Pittsburgh	L. H Landon	3 960	1,552	83	24	2	6	100
Robert Packer Hospital★[1]	Sayre Pa		2 198	5 191	44	34		5	150
Rhode Island Hospital★[1]	Providence R I	J M. Beardsley	4 480	9 525	125	45	2	8	60
Roper Hospital★[1]	Charleston S C	F E Kredel	3 419	11 424	146	70	4	8	50
Baptist Memorial Hospital★[1]	Memphis Tenn	M J Tendler	4 241	1 553	55	20		1	75
John Gaston Hospital★	Memphis Tenn	H Wilson	2,531	13 859	90	44	2	7	
St Thomas Hospital★[1]	Nashville Tenn	L. W Edwards	2 734		27	12	4	12	150
Vanderbilt University Hospital★[1]	Nashville Tenn	B Brooks	3 954	13 895	100	43		10	35
Parkland Hospital★[1]	Dallas Texas	C Moyer	1 459	8,267	58	26	7	14	
University of Texas Medical Branch Hospitals★[1] John Sealy Hospital	Galveston Texas	R M Moore	918	6 774	35	21	3	12	75
Jefferson Davis Hospital★	Houston Texas	M E De Bakey	2 036	16 482	94	40	3	11	25
Salt Lake County General Hospital★[1]	Salt Lake City	P B Price	995	6 401	95	57	3	9	50
University of Virginia Hospital★[1]	Charlottesville Va	E P Lehman	2 669	10 858	65	45	6	12	50
Norfolk General Hospital★[1]	Norfolk Va	R L Payne Sr	1 851	1,246	38	17	4	8	125
Medical College of Virginia—Hospital Division★[1]	Richmond Va	I A. Bigger	3 807	5 679	122	51	7	20	46 50
King County Hospital Unit No 1 (Harborview)★[1]	Seattle Wash	H N Harkins	1 150	5 434	68	42	4	11	100
Virginia Mason Hospital★[1]	Seattle Wash	J W Baker	1 354	7,215	12	12	2	8	75
State of Wisconsin General Hospital★[1]	Madison Wis	E. R Schmidt	2 049	6 991	70	53	3	12	25

The following services have been approved for three years of training by the Council, the American Board of Surgery and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery

Hospitals, 258 Assistant Residencies and Residencies, 1538

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Beginning Stipend (Month)
UNITED STATES ARMY									
Gorgas Hospital★	Ancon C Z	E. C Lowry	1 648	5 317	25	18	2	6	
Tripler Army Hospital★	Honolulu Hawaii	D M Walker	9 700	43 377	16	13			
UNITED STATES PUBLIC HEALTH SERVICE									
U S Public Health Service Hospital★[1]	San Francisco	M B Noyes	3 645	24,253	36	30	1	4	
U S Public Health Service Hospital★[1]	New Orleans La	O C Williams	2,268	6,292	28	18	2	6	
U S Public Health Service Hospital★[1]	Baltimore	H. D Fishburn	4 416	16 157	110	92	2	6	
U S Public Health Service Hospital★	Boston	T S McGowan	1,897	3 449	16	9	1	4	
U S Public Health Service Hospital★[1]	Staten Island N Y	J D Lane	6,252	23,831	57	39	3	0	
U S Public Health Service Hospital★[1]	Seattle Wash	T S. McGowan	2 155	8,269	30	20	1	5	

Numerical and other references will be found on page 462.

26 SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered[a]	Total Residencies Offered[a]	Beginning Stipend (Month)
VETERANS ADMINISTRATION									
Veterans Admin. Hospital[1]	Tuskegee Ala	A C Yancey	1 225	10	30	16	3	9	
Veterans Admin Hospital	Coral Gables Fla	M H Todd	2 653	4 150	49	43	6	17	
Veterans Admin Hospital★[1]	Chamblee Ga	H D Smith	1,343		53	38	11	19	
Veterans Admin. Hospital[1]	Wadsworth Kans	W I Hinkle	1 426		51	46	4	11	
Veterans Admin Hospital	Wichita Kans	C A Higgins	2 059		34	24	2	[illegible]	
Veterans Admin Hospital[1]	Lincoln Nebr	F M Marquis	920		19	10	2	6	
Veterans Admin Hospital	Albuquerque N M	R I Carlson	711		16	15	6	10	
Veterans Admin Hospital[1]	Buffalo	J D MacCallum	2 692	1 120	56	37		17	
Veterans Admin Hospital	Columbia S C	K M Lippert	1 437	1 602	18	12	2	5	
Veterans Admin Hospital[1]	Martinsburg W Va	R K Hollingsworth	1 671	969	36	20	0	6	
NONFEDERAL									
Carraway Methodist Hospital★[1]	Birmingham Ala	C N Carraway	1 601	15 146	34	17	3	6	100
Herrick Memorial Hospital★[1]	Berkeley Calif	S H Babington	3 415	425	49	32	1	3	150
San Joaquin General Hospital★[1]	French Camp Calif	W Brock	2 032	14 632	73	58	2	5	220
General Hospital of Fresno County★[1]	Fresno Calif	C M Vanderberg	1 009	5 161	81	26	2	5	200
California Hospital★[1]	Los Angeles	W H Olds	2 755	1 024	41	20	2	4	125
Cedars of Lebanon Hospital★[1]	Los Angeles		1 097	4 067	19	8	2	2	75
Hospital of the Good Samaritan★[1]	Los Angeles	C J Berne	2 056	4 448	24	13	2	6	150
Queen of Angels Hospital★	Los Angeles	R Stewart	3 866	738	80	44	1	3	100
White Memorial Hospital★	Los Angeles	C I Stafford	1 230	5 632	36	18	3		120
Highland Alameda County Hospital★[1]	Oakland Calif	T C Lawson	1 208	3 770	65	28	6	9	145
Mercy Hospital★[1]	San Diego Calif	J J O Hara	6 512	261	87	27	3		100
San Diego County General Hospital★[1]	San Diego Calif	H C Holder	1 079	4 951	64	21	0	9	125
St Joseph s Hospital★[1]	San Francisco	A R Kilgore	2,505	375	23	13	3	6	100
St. Mary s Hospital★[1]	San Francisco	J Butler	4,500	2 244	54	23	2	5	100
Southern Pacific General Hospital★[1]	San Francisco		1 733		18	13	3	7	150
Santa Barbara Cottage Hospital★[1]	Santa Barbara Calif	D L Reeves	695	1 653	[illegible]	5	4	9	100
Harbor General Hospital★	Torrance Calif	H H Jacob	1 100	2,301	45	31	4	10	105
Mercy Hospital★[1]	Denver	I H Good	5 787	1 276	78	44	1	1	100
Presbyterian Hospital★[1]	Denver	C B Kent	5 083	862	44	22	1	7	65
St Anthony Hospital★[1]	Denver	J R Plank	4 237	530	51	20	1	1	75
St Joseph s Hospital★	Denver	J M Foster	1 783		17	7		5	100
St Luke s Hospital★[1]	Denver	C B Packard	5,505		77	20	1	3	100
Bridgeport Hospital★[1]	Bridgeport Conn	M I Cheney	3 523	9 198	52	22	1	1	100
St Francis Hospital★	Hartford Conn	B B Landry	3 766	1 254	87	29	1	7	75
New Britain General Hospital★[1]	New Britain Conn	B B Clark	4 861		56	35	1	3	115
Grace-New Haven Community Hospital Grace Unit★	New Haven Conn	L C Foster	1 601		32	13	1	3	40
Hospital of St Raphael★[1]	New Haven Conn	C Connor	1 970	1 031	59	12	1	9	75
Waterbury Hospital★[1]	Waterbury Conn	W F Wight	3,868	3 367	78	33	2	4	100
Memorial Hospital★[1]	Wilmington Del	J C Pierson	1 429	856	54	37	2	4	125
Doctors Hospital★[1]	Washington D C	C S White	2 494		40	28	1	3	100
Garfield Memorial Hospital★[1]	Washington D C	J O Warfield Jr	1 607	1 922	44	27	2	6	75
Duval Medical Center★	Jacksonville Fla	F Jelks	1 455	5,259	51	24		6	125
St. Vincent s Hospital★	Jacksonville Fla	F J Waas	1 736	105	14	9	3	7	125
Jackson Memorial Hospital★[1]	Miami Fla	W C Jones	5 804	15 443	191	122	6	15	60
Crawford W Long Memorial Hospital★[1]	Atlanta Ga	C F Holloway	4 843	905	41	10	4	7	75
Piedmont Hospital★[1]	Atlanta Ga	F W McRae	2 735		23	9	1	3	90
Emory University Hospital★	Emory University Ga	D C Elkin	1,555		18	9	0	15	25
American Hospital★[1]	Chicago	M Thorek	1 327	398	20	13	5	5	50
Augustana Hospital★[1]	Chicago	N M Percy	3,599	3 959	147	95	4	9	75
Chicago Memorial Hospital★	Chicago	J Van Prohaska	1 055	1 560			1	2	200
Grant Hospital★[1]	Chicago	L Seed	1 725	5 650	56	33	2	6	150
Illinois Masonic Hospital★[1]	Chicago	P Shambaugh	1 358	8 219	14	7	4	7	50
Lutheran Deaconess Home and Hospital★	Chicago	J D Koucky	4 168	1,334	44		1	3	100
Mount Sinai Hospital★[1]	Chicago	J T Gault	3,514	10 653	101	41	1	3	50
Provident Hospital★	Chicago	W S Grant	1 065		43	25	1	4	50
St. Elizabeth Hospital★	Chicago	M C Luken	2 051	792	22	0	1	1	100
St. Joseph Hospital★	Chicago	H McKenna	1 061	867	23	5	1	[illegible]	125
St Mary of Nazareth Hospital★	Chicago	E H Warszewski	4 660	393	42	10	1	3	100
Wesley Memorial Hospital★[1]	Chicago	R W McNealy	2 473		12	10	3	0	25
Evanston Hospital★[1]	Evanston Ill	J M Dorsey	2 080	3 130	29	22	1	7	50
St Francis Hospital★[1]	Evanston Ill	J J Fahey	4 195	3 053	69	20	2	6	150
West Suburban Hospital★	Oak Park Ill	J J Theobald	2,263	2,832	44	24	2	6	160
Clinic Hospital	Bluffton Ind	H D Caylor	922		11	8	1	2	100
Indianapolis General Hospital★[1]	Indianapolis	W S Tucker	1 400	6 945	61	35	2	6	80
Methodist Hospital of Indiana★[1]	Indianapolis	A K Harcourt	3 791		61	22	4	7	160
St Vincent s Hospital★[1]	Indianapolis	W D Gatch	2 882	1 962	78	41	1	3	200
St. Elizabeth Hospital★[1]	La Fayette Ind	R F Gery	2 758	1 852	75	32	2	6	150
Iowa Methodist Hospital★[1]	Des Moines Iowa	T D Throckmorton	3 041		45	27	3	6	100
St Margaret s Hospital★	Kansas City Kans	M Laing	2 770	1 600	36	20	1	7	150
Wesley Hospital★[1]	Wichita Kans	W C Bartlett	1 619		10	4	1	4	
St. Joseph Hospital★[1]	Lexington Ky	F W Rankin	1 856		57	42	3	7	140
Ochsner Foundation Hospital★[1]	New Orleans	A Ochsner	1 086	7 141	23	21	2	11	125
Southern Baptist Hospital★[1]	New Orleans	H Mahorner	5 803		18	34	1	3	125
Touro Infirmary★[1]	New Orleans	I W Kaplan	3 417	7,371	48	20	2	6	175
Lutheran Hospital★[1]	Baltimore	W F Gilmore	1,221	1 542	30	9	2	5	85
Maryland General Hospital★[1]	Baltimore	W M Firor	1 957	6 795	73	15	2	7	50
Provident Hospital and Free Dispensary★[1]	Baltimore	K McLanahan	1 750	706	56	7	3	6	100
St. Agnes Hospital★	Baltimore	C A Stewart	1 838	476	51	23	3	5	5
St. Joseph s Hospital★[1]	Baltimore	W R Geraghty	3 517	2 561	75	16	2	6	115
South Baltimore General Hospital★[1]	Baltimore	O S Lloyd	2 184	4 997	54	15	4	8	125
Beverly Hospital★	Beverly Mass	P P Johnson	2 017	8 178	41	35	1	4	100
Boston City Hospital★[1] [36]	Boston	W R Morrison	10,533	60 093	546	132	25	65	90
Carney Hospital★	Boston	A McK Fraser and W F Browne	2 054	3 403	64	31	1	7	75
Children s Hospital★	Boston	R Gross	2 049	17,203	58	44	6	11	4*
New England Hospital★[1]	Boston	F L Young	1 591	2 052	13	7	2	4	50
St. Elizabeth s Hospital★[1]	Boston	J W Spellman	4 482	5 806	68	32	3	5	125
Cambridge City Hospital★[1]	Cambridge Mass	J B Vernaglia	1 303	8 404	64	27	1	3	125
Mount Auburn Hospital★[1]	Cambridge Mass	S Fraser	1 748	2 001	48	24	1	3	50
Newton Wellesley Hospital★[1]	Newton Lower Falls Mass	R I Smith	2 765	1,207	56	27	1	3	100
Springfield Hospital★[1]	Springfield Mass	F S Hopkins	6 375	4 009	105	44	4	11	50
Memorial Hospital★[1]	Worcester Mass	B C Wheeler	3,237	694	68	30	1	4	100
Worcester City Hospital★[1]	Worcester Mass	B F Andrews	2 669		92	39	4	4	100
St. Joseph s Mercy Hospital★[1]	Ann Arbor Mich	H Beebe	1 067		15	9	4	7	125
Leila Y Post Montgomery Hospital★[1]	Battle Creek, Mich	R L Mustard	973	6 142	14	9	1	4	250
Alexander Blain Hospital	Detroit	A W Blain	1 640	22 367	15	7	4	1*	150

Numerical and other references will be found on page 462

26 SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered	Total Residencies Offered	Beginning Stipend (Month)
Evangelical Deaconess Hospital*1	Detroit	E C Baumgarten	4 935		29	11	1	3	200
Jennings Memorial Hospital*1	Detroit	J B Hartzell	563		-	1	1	3	250
Mt Carmel Mercy Hospital*1	Detroit	N B Kalder	8 607		119	32	6	[illegible]	125
Providence Hospital*1	Detroit	C M O Brien	6 156		124	67	1	3	200
St Joseph's Mercy Hospital*1	Detroit	D J Leithauser	1 319	291	9	3	1	3	150
Blodgett Memorial Hospital*1	Grand Rapids Mich	L C Carpenter	1 490	6	57	29	1	3	200
St Mary's Hospital*1	Grand Rapids Mich	H J Van Duine	3 761	2 015	90	1	1	3	125
Highland Park General Hospital*1	Highland Park Mich.	I J Witter	1 503	281	19	9	1	3	208
Bronson Methodist Hospital*1	Kalamazoo Mich	R J Hubbell	2 948	2 826	48	17	1	3	150
Pontiac General Hospital*1	Pontiac Mich	V C Abbott	3 999	7 771	84	42	2	4	100
Saginaw General Hospital*1	Saginaw Mich	H M Bishop	2 540	2 034	10	8	1	3	300
Minneapolis General Hospital*1	Minneapolis	A A. Zierold	877	6 554	27	46	3	11	125
St Barnabas Hospital*1	Minneapolis	C A Hallberg	1 455		14	10	1	1	
Mayo Foundation	Rochester Minn						46	140	135
Charles T Miller Hospital*1	St Paul Minn	E M Jones and H B Zimmermann	2 867	3 932	16	12		3	115
Lutheran Hospital	Vicksburg Miss	W H Parsons	1 512	11 167	28	18	1	3	50
Mercy Hospital Street Memorial*1	Vicksburg Miss	A Street	1 908	12 269	45	10	1	3	
St Louis County Hospital*1	Clayton Mo	C R Doyle	1 036	16 701	80	52	3	6	95
Kansas City General Hospital No 1*	Kansas City Mo	H C Lapp	1,264	4 262	70	45	4	12	75
Research Hospital*1	Kansas City Mo	C J Hunt	2 426	2 622	64	28	2	6	150
St. Joseph Hospital*	Kansas City Mo	R R Coffey	7 457	2 683	82	50			
St Luke's Hospital*1	Kansas City Mo	L P Engel	1,552				2	4	150
De Paul Hospital*	St Louis	J W Thompson	2 007	472	57	19	1	3	150
Missouri Pacific Hospital	St Louis	R A Weir	3 008	40 943	70	29	4	8	100
St John's Hospital*	St Louis	W P Clennon	2 712	986	102	53	1	3	
Creighton Memorial-St Joseph's Hospital*1	Omaha	H H McCarthy	4 813	6 769	60	24	1	3	100
University of Nebraska Hospital*1 38	Omaha	H H Davis	651	1 751	34	30	3	9	125
Atlantic City Hospital*	Atlantic City N.J	D B Allman	2,256	26 088	67	23	1	3	100
Cooper Hospital*1	Camden N.J	I E Deibert	2 472	4 726	169	78	2	4	83 33
West Jersey Hospital*1	Camden N.J	H W Jack	1 441	1 935	30	15	1	3	125
Jersey City Hospital*1	Jersey City	E J Halligan	6 752	22 836	272	81	8	20	35
Burlington County Hospital 1	Mount Holly N.J	T J Summey	1 291	2,237	28	14	1	2	100
Hospital of St Barnabas and For Women and Children*1	Newark N.J	H A Schulte	4 653	2 144	42	22	1	4	100
Newark Beth Israel Hospital*1	Newark N.J	A. B Abrams	5,244	10 040	97	32	1	2	50
Newark City Hospital	Newark N.J								
Paterson General Hospital*1	Paterson N.J	L E. Deyoe	2 753	1 622	98	22	3	9	100
Binghamton City Hospital*1	Binghamton N Y	J J Brick	3 631	279	94	40	3	7	136 50
Beth El Hospital*1	Brooklyn	H Neuhof	2 366	9 894	56	13	2	4	100
Greenpoint Hospital*1	Brooklyn	H. Feldman	1 920	9,538	90	30	2	4	140
Methodist Hospital*1	Brooklyn	S G Clark and P A Renaud	2 477	5 863	66	22	2	5	25
Norwegian Lutheran Deaconesses Home and Hospital*1	Brooklyn	F K Johnson	1 716	2 260	48	33	2	4	75
St Catherine's Hospital*1	Brooklyn	J J Black and J A McCabe	3 089	4 764	51	15	1	4	75
St John's Episcopal Hospital*1	Brooklyn	M N Foote	1 714	2 820	46	12	1	3	95
St Mary's Hospital*1	Brooklyn	A. J McGowan	1 063	3 950	32	6	1	3	80
Wyckoff Heights Hospital*1	Brooklyn	P A Zoller	1 437	2 636	51	23			
Deaconess Hospital*1	Buffalo	T T Jacobs	4,546	2 015	59	22	1	3	125
Clifton Springs Sanitarium and Clinic 1	Clifton Springs N Y	R M Price	1 361	6 414	31	17		1	100
Mary Imogene Bassett Hospital*1	Cooperstown N Y	M A. McIver	878	8 852	9	6	1	2	83 33
Jamaica Hospital*1	Jamaica N Y	J D Hallinan	3,559	2 087	50	8		2	150
Mary Immaculate Hospital*1	Jamaica N Y	F N Dealy and H W Draffen	1 486	1 454	43	14	1	4	110
Charles S Wilson Memorial Hospital*1	Johnson City N Y	D Smith	3 643		49	24	3	7	150
Mount Vernon Hospital*1	Mount Vernon N Y	N W Cornell	2 114	8 090	520	210	2	4	251
New Rochelle Hospital*	New Rochelle N Y	G C Adie	5,296	3,267	10	7	1	4	125
Bellevue Hospital Div I—Columbia University *1	New York City	F B Berry	676	9 990	83	17	3	9	80
Bronx Hospital*1	New York City	H. B Schoenberg	3 186	4 790	70	21	2	8	35
Fordham Hospital*1	New York City	L. Marton	2 985	17 472	229	47	2	6	80
French Hospital*1	New York City	H B Keyes	2 754	10 690	58	28	1	3	20
Knickerbocker Hospital*1	New York City	R H Patterson	2,001	4,355	70	3	5	9	
Lenox Hill Hospital*	New York City	O C Pickhardt and F M Donehue	3 182	5,536	115	48	2	6	50
Lincoln Hospital*1	New York City	F H Amendola	3 433	47 566	188	69	6	12	60
Memorial Hospital1	New York City								
Montefiore Hospital for Chronic Diseases*1	New York City	E S Hurwitt	1 971	2 132	74	41	6	-	60
Morrisania City Hospital*1	New York City	P Daly and G Milani	1 093	3 943	190	30	2	6	80
New York City Hospital*1	New York City	P A Wade	2 740	12 497	123	15	1	4	80
St Clare's Hospital*	New York City	J L Madden	6 106	8 657	63	46	2	10	25
Highland Hospital*1	Rochester N Y	W A Calihan	3 610	579	53	26	4	[illegible]	100
Rochester General Hospital*1	Rochester N Y	W A Fenstermacher	3 915	3 305			4	14	55
St Mary's Hospital*1	Rochester N Y	N J Pfaff	11 392	2 795	86	46	2	6	125
Ellis Hospital*1	Schenectady N Y	S F MacMillan	3 705		47	37	1	3	100
Grasslands Hospital*1	Valhalla N Y	G C Adie	351	5 703	41	24	2	4	125
Charlotte Memorial Hospital*1	Charlotte N C	E R Hipp	1,570	891	15	6	1	3	100
Lincoln Hospital*	Durham N C	H M Schiebel	794	1,322	39	12	1	2	225
Watts Hospital*1	Durham N C	H M Schiebel	3 728	19 967	36	11	2	7	50
Aultman Hospital*1	Canton Ohio	C W Zeiders	3 9[illegible]1	417	98	50	5	9	125
Christ Hospital*1	Cincinnati	D E Earley	2 160	4 673	52	24	2	5	125
Good Samaritan Hospital*1	Cincinnati	J J Maloney	3 065	1,500	62		3	7	155
Jewish Hospital*1	Cincinnati	J D Heiman	7,317	1 447	63	30	2	8	60
St Mary's Hospital*1	Cincinnati	K B Hanson	1 133	804	29	18	1	3	150
St Alexis Hospital*1	Cleveland	F A Spittler	5,527	1 783	66	23	2	6	100
St Vincent Charity Hospital*1	Cleveland	E P Neary	2 171	11 088	74	14	4	12	75
Mount Carmel Hospital*1	Columbus Ohio	W H Teachnor	3 170	780	55	20	1	3	135
White Cross Hospital*1	Columbus Ohio	K P Klassen	3,329		86	26	2	4	100
Miami Valley Hospital*1	Dayton Ohio	E F Damstra	3 127	4 103	75	33	2	6	75
Huron Road Hospital*1	East Cleveland Ohio	H W Brown	2,304	422	71	31	4	9	150
Lakewood Hospital*	Lakewood Ohio	N W Thiessen	2 664	531	29	11	3	6	100
St Rita's Hospital*	Lima Ohio	C H Leech	3 622	2 802	59	28	1	5	100
Maumee Valley Hospital*	Toledo Ohio	E. J McCormick	551	2 127	65	38	4	8	125
Mercy Hospital*	Toledo Ohio	E. L Caspari	2 095	752	37	15	2	6	137
St Vincent's Hospital*1	Toledo Ohio	B C Shaffer	2,543		69	29	2	5	125
Toledo Hospital*1	Toledo Ohio	G H Reams	3 755	5,303	87	48	2	4	125
St Anthony Hospital*	Oklahoma City	L. J Starry	4 607	728	103	36	1	3	150
University Hospital *	Oklahoma City	L J Starry	1 037	9 111	37	18	3	3	50
Hillcrest Memorial Hospital*1	Tulsa Okla	H J Black	1 551		29	9	1	1	75
Emanuel Hospital*1	Portland Ore	F W Carter	3,214		46	25	1	3	85
St Vincent's Hospital*1	Portland Ore	D B Seabrook	4 463		114	60	1	3	75
Abington Memorial Hospital*1	Abington Pa	D B Pfeiffer	2,517	2 015	74	40	1	3	50

Numerical and other references will be found on page 462

26 SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
Allentown Hospital*[1]	Allentown Pa	R L Schaeffer	7 987	1 383	88	42	1	3	100
Sacred Heart Hospital*[1]	Allentown Pa	C S Hertz	4,536	7 423	91	44	3	4	150
St. Luke's Hospital*[1]	Bethlehem Pa	D P Walker	3 917	431	91	55	2	6	100
Bryn Mawr Hospital*[1]	Bryn Mawr Pa	J B Flick	6 100	1 120	48	20	1	3	75
George F Geisinger Memorial Hospital*[1]	Danville Pa	H L Foss	2 023	11 485	44	25	2	4	100
Hamot Hospital*[1]	Erie Pa	A F Jonas	1 979	1 426	51	20	3	3	150
St. Vincent's Hospital*	Erie Pa		3 467	882			1	3	50
Harrisburg Polyclinic Hospital*[1]	Harrisburg Pa	W K McBride	2 741	3,573	33	12	1	3	200
St Joseph's Hospital*	Lancaster Pa	J L Atlee Jr	4 107	7 613	84	51		3	150
Episcopal Hospital*[1]	Philadelphia	J W Klopp	1 968	10 655	47	18	2	6	50
Graduate Hospital of the University of Pennsylvania*[1]	Philadelphia	W Bates	1,593	10 127	24	12	1	5	
Hospital of the Woman's Medical College of Pennsylvania*[1]	Philadelphia	L K. Ferguson	745	1 488	7	4	1	3	60
Jewish Hospital*[1]	Philadelphia	F B Block and R N Goldsmith	2 940	4 480	98	23	1	6	50
Methodist Episcopal Hospital*[1]	Philadelphia	G Willauer	1 414	10 333	23	4	1	2	100
Mount Sinai Hospital*[1]	Philadelphia	B Lipshutz and L Kaplan	1 374	10 168	25	11	3	3	50
Philadelphia General Hospital*[1]	Philadelphia	L K Ferguson	2,881		161	91	2	6	75
Presbyterian Hospital*[1]	Philadelphia	F A Bothe and O C King	3,886	9,589	76	41	1	4	
Temple University Hospital*[1]	Philadelphia	W E Burnett	2 311	2 900	90	55		8	
Woman's Hospital*[1]	Philadelphia	C M Smyth	553	3 037	9	7	1	3	100
Mercy Hospital*[1]	Pittsburgh	H H Donaldson	3,531	5 615	63	17			100
Montefiore Hospital*[1]	Pittsburgh	Y D Koskoff	2 012	2 460	57	27	3	3	50
Pittsburgh Hospital*[1]	Pittsburgh	J D Singley	1 088	3 891	49	0	1	3	125
St Francis Hospital*[1]	Pittsburgh		2 775	2 450	64	13			
Reading Hospital*[1]	Reading Pa	C B Rentschler	1 432	1 406	38	21		3	125
St Joseph's Hospital*	Reading Pa	R Impink	1 167		40	33			
Williamsport Hospital*[1]	Williamsport Pa	A F Harot	2 075	12,357	178	46	1	2	125
York Hospital*[1]	York Pa	J F Bacon	1 621	756	96	29	1	3	100
Baroness Erlanger Hospital*[1]	Chattanooga Tenn	W G Stephenson	2 713	2 263	70	23	6	13	75
Knoxville General Hospital*	Knoxville Tenn	J B Ely	1 663	2 955	71	31	2	5	95
Methodist Hospital*	Memphis Tenn	J A Crisler	2 290	2 652	38	9	1	3	75
St Joseph Hospital*[1]	Memphis Tenn	A J Grobmyer	1,511	574	43	17	1	4	100
George W Hubbard Hospital of Meharry Medical College*[1]	Nashville Tenn	M Walker	1 714	8 406	76	23	2	9	75
Mid State Baptist Hospital*[1]	Nashville Tenn	J A Kirtley Jr	3 116	921	43	14	3	5	150
Nashville General Hospital*	Nashville Tenn	C M Miller	1 417	23,375	57	10	3	7	100
Baylor University Hospital*[1]	Dallas Texas	J W Duckett	2,895	1,596	52	20	5	8	50
Methodist Hospital*[1]	Dallas Texas	C C Nash	2,277	670	29	11	6	9	100
Hermann Hospital*[1]	Houston Texas	G Waldron	3 095	2 599	62	24	1	3	75
St Joseph Infirmary*	Houston Texas	J P Barnes	1 686	522	36	17	1	3	150
Robert B Green Memorial Hospital*[1]	San Antonio Texas	T A Pressly	526	2 727	26	8	1	3	150
Scott and White Memorial Hospital*[1]	Temple Texas	A C Scott and G V Brindley Sr	4 150		43	10	4	14	200
Wichita Falls Clinic Hospital*	Wichita Falls Texas	W E Crump	974	24 367	3	2	1	1	300
Dr W H Groves Latter Day Saints Hospital*[1]	Salt Lake City	E Snow	7 741	1 176	91	40	2	6	125
St Mark's Hospital*[1]	Salt Lake City	M C Lindem	2 097	147	48	25	3	4	100
Mary Fletcher Hospital*[1]	Burlington Vt	A G Mackay	913	501	12	7	1	3	50
Alexandria Hospital*[1]	Alexandria Va	C L Fifer	1 120		28	16	1	3	120
Chesapeake and Ohio Hospital	Clifton Forge Va	J M Emmett	3 077	8 139	40	16			100
Jefferson Hospital*	Roanoke Va	A P Jones	2 043	6 816	19	8	1	4	175
Beckley Hospital	Beckley W Va		2 622	15 925	41	25	1	3	150
Charleston General Hospital*[1]	Charleston W Va	J E Cannaday and H A Bailey	2 455	3 442	33	14	2	5	125
St Mary's Hospital*	Huntington W Va	F L Coffey	3 445	5,200	20	6	2	4	125
Laird Memorial Hospital	Montgomery W Va	W R Laird	2 434	11 284	43	18	1	3	150
St Joseph's Hospital*[1]	Parkersburg W Va	A R. Lutz	2,543	200	45	20	2	4	150
Myers Clinic Hospital[1]	Philippi W Va	H C Myers	1 395	11 632	22	12	1	3	200
Madison General Hospital*[1]	Madison Wis	J P Malec	1,256		34	17	2	4	50
Columbia Hospital*	Milwaukee	F Raine	1,528		61	37	3	3	75
Milwaukee County Hospital*[1]	Milwaukee	C F Conroy	1 776	9,210	117	53	3	12	50
Milwaukee Hospital*[1]	Milwaukee	I Schulz	3 815	3 170	41	28	1	3	125
St. Joseph's Hospital*	Milwaukee	F Stratton	5 702	910	55	26	1	4	75
Queen's Hospital*[1]	Honolulu Hawaii	J E Stode	1 807	6 620	24	18	2	5	100
San Juan City Hospital	San Juan Puerto Rico	J N Benitez	2,223	31,331	47	23	2	5	150

The following hospitals approved by the Council the American Board of Surgery and the American College of Surgeons through the Conference Committee on Graduate Training in Surgery, offer training in surgery of less than three years duration, which is integrated with or contributory to a fully approved program

Hospitals, 33 Assistant Residencies and Residencies 70

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES NAVY									
U S Naval Hospital*	Great Lakes Ill	E S Lowe	1 796	716	28	24			
NONFEDERAL									
Glendale Sanitarium and Hospital*	Glendale Calif	J Janzen	3 088	2 870	31	17	2	2	181
Peralta Hospital[1]	Oakland Calif	J L Lohse	4 708		60	29	3	3	125
Samuel Merritt Hospital	Oakland Calif	W Crane	1 437		9	7			100
French Hospital*[1]	San Francisco	W L Rogers	4 004	2 631	7	4	3	3	100
Children's Hospital[1]	Denver	G B Packard	770	650	16	14		1	50
Children's Memorial Hospital[1]	Chicago	W J Potts	2,206	2 744	16	15		2	75
St Francis Hospital*[1]	Peoria Ill	C D Branch	2 088	5 830	12	7	1	3	100
Norton Memorial Infirmary*[1]	Louisville Ky	S S Clark	1 662		29	13	2	3	100
Truesdale Hospital*[1]	Fall River Mass								
Salem Hospital*[1]	Salem Mass	W G Phippen	1 743	802	58	24		1	85
Pondville Hospital	Walpole Mass								
Northwestern Hospital*[1]	Minneapolis	R E Priest	1 527		16	10	3	3	173
St Louis Children's Hospital	St. Louis Mo								

Numerical and other references will be found on page 462

26 SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
Bishop Clarkson Memorial Hospital*	Omaha	J D Bisgard	1 211	315	20	13	1	1	100
Mary Hitchcock Hospital*¹	Hanover N H	G A Lord	3 530	13 067	35	30	5	17	163
Brooklyn Cancer Institute ¹	Brooklyn	I Sirs						2	80
Coney Island Hospital*¹	Brooklyn	J E Hammett	2 163	25 858	96	27	2	6	90
United Hospital*	Port Chester N Y	J V Hibbard	2 116	1 035	75	33	1	2	150
Children s Hospital ¹	Akron, Ohio	S. A Schlveter	4 030	1 124	16	7	0	1	200
Children s Hospital	Cincinnati	B N Carter	1 237	1 018			1	2	
St. Francis Hospital ¹	Columbus Ohio	R. M Zollinger	3 073		66	48	1	4	97
Bradford Hospital	Bradford Pa	C Smith	848	11 806	14	6	1	1	200
Easton Hospital*¹	Easton Pa	T C Zulick Jr	2 367	5 584	46	23	1	1	157
Children s Hospital ¹	Philadelphia	C E Koop	1 720	4 756	29	23		3	60
Children s Hospital	Pittsburgh	E. W Meredith and G V Foster	1,334	3 126	25	12			
Gaston Hospital	Dallas Texas	J V Goode	43	41					
M D Anderson Hospital for Cancer Research ¹	Houston Texas	R L. Clark Jr	898	9 200	40	28		6	150
Methodist Hospital*¹	Houston Texas	L L D Tuttle	864	206	11				75
Holy Cross Hospital*¹	Salt Lake City	K B Castleton	3 436	1 295	39	16	3	7	75
Lewis Gale Hospital*¹	Roanoke Va	W L Sibley	1 165	15 917	11	6	1	2	150
Chesapeake and Ohio Hospital ¹	Huntington W Va	R. J Wilkinson	2 493	10 390	38	11	1	3	115
Milwaukee Children s Hospital*	Milwaukee	A A Schaefer	615	2 145	23	19	1	1	

The following services are approved by the Council as offering satisfactory training of one or two years' duration, in preparation for residency training in the surgical specialties (Surgical Residencies, J A M A , 142:1216 (April 15, 1950)

Hospitals, 129 Assistant Residencies and Residencies, 292

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Beginning Stipend (Month)
UNITED STATES ARMY									
Army and Navy General Hospital*	Hot Springs Ark	W W Nichol	724	432	12	10	1	1	
UNITED STATES PUBLIC HEALTH SERVICE									
U S Public Health Service Hospital*¹	Detroit, Mich	M. B Noyes	1 410	1 559	20	14			
U S Public Health Service Hospital*	Cleveland	M E Myers	1 203	570	11	7			
FEDERAL SECURITY AGENCY									
St Elizabeth s Hospital*¹	Washington D C	W A Parker	1 003	9 348	79	57		1	
NONFEDERAL									
City Hospital*	Mobile Ala	W R Meeker	1 208	4 040	51	31	2	2	175
Memorial Hospital*¹	Phoenix Ariz	J Emert	807	253	24	10	2	2	200
St Joseph s Hospital*¹	Phoenix, Ariz	T W Woodman	4 591		35	20	2	2	175
Tucson Medical Center*¹	Tucson Ariz	F J Lessmann	846	921	12	2	4	4	200
Arkansas Baptist Hospital*¹	Little Rock Ark	E C Gay	1 510		39	11	2	3	
St. Vincent Infirmary*¹	Little Rock Ark	W G Cooper	4 458	1 933	36	12	1	1	125
Seaside Memorial Hospital*¹	Long Beach Calif	W S. Cheney	1 889	6 180	23	12	4	4	150
Santa Fe Coast Lines Hospital*	Los Angeles	L. Chaffin	903	14 750	10	8	2	2	195
Collis P and Howard Huntington Memorial Hospital*	Pasadena Calif	J M Marshall	3 784	4,557	114	67	1	2	130
San Bernardino County Charity Hospital*	San Bernardino Calif	C Sprague	827	8 615	25	14		3	170
Children s Hospital*¹	San Francisco	A Kilgore	725	2 311	9	6	1	1	50
Mary s Help Hospital*¹	San Francisco	E. Carlson	1 723	2 637	6	3	1	2	150
St. Luke s Hospital*¹	San Francisco	G D Delprat	4 486	1 493	42	20	1	3	150
Santa Clara County Hospital*¹	San Jose Calif	M Pickworth	572	2 077	35	24	2	4	235
Community Hospital of San Mateo County ¹	San Mateo Calif	K. H Prindle	2 008	3 234	52	31		1	300
St John s Hospital*	Santa Monica Calif	J F Roberts	910	129	7	6			100
Corwin Hospital*	Pueblo Colo	S B Potter and J E. A. Connell	518		9	7		4	50
Lawrence and Memorial Associated Hospitals*¹	New London Conn	F B Hartman	2 978		40	10	2	2	125
Norwalk Hospital*¹	Norwalk Conn	E. C Beck	1 465	181	15	7	2	2	155
St Mary s Hospital	Waterbury Conn	C Audet	2 689	2 704	39	5	1	2	150
Sibley Memorial Hospital*¹	Washington, D C	P S Putzki	5 855	58	52	31	2	5	100
Riverside Hospital ¹	Jacksonville Fla	E Jelks	981	7,308	13	8	1	1	160
St. Luke s Hospital*	Jacksonville Fla	K A. Morris	1,336	4 847	33	14	1	2	140
St Francis Hospital	Miami Beach, Fla								
Orange Memorial Hospital*¹	Orlando Fla	J R Chappell	2 364		79	81	1	3	210
Tampa Municipal Hospital*	Tampa Fla	C F Chunn	2 273	1,577	54	17	1	1	100
Georgia Baptist Hospital*¹	Atlanta Ga	T C Davison	1 682	150	18	9	2	5	175
St Joseph s Infirmary *	Atlanta Ga	W P Nicolson Jr	3 086	1 761	34	15	1	3	170
Henrotin Hospital*	Chicago	C B Pueston	1 660	14,221	22	15	1	1	100
Hospital of St Anthony de Padua*¹	Chicago								
Illinois Central Hospital*¹	Chicago	C C Guy	2 955	15 909	43	13	1	1	200 32
Norwegian American Hospital*¹	Chicago	R Johnson	2 023		10	2	3	4	150
Ravenswood Hospital*¹	Chicago	J D Farrington	3 038	2 865	56	48	1	1	75
St Anne s Hospital*¹	Chicago	P F Fox	2,535	530	36	7	2	2	150
Women and Children s Hospital*¹	Chicago	E. Giryotas	363	569	5	3	1	1	75
Woodlawn Hospital*¹	Chicago	H P Jenkins	707	616	9	4	2	2	150
Little Company of Mary Hospital*¹	Evergreen Park Ill	F D Huntington	2 450		36	12	3	3	100
Methodist Hospital of Central Illinois*¹	Peoria Ill	F A. Christensen	3 435	1 836	50	26	3	3	200
Ball Memorial Hospital*¹	Muncie Ind	W C Moore	3 989		65	23	1	1	150
St Franci Hospital*¹	Wichita, Kans	L. E. Knapp	2 074		52	21	2	2	
Good Samaritan Hospital*¹	Lexington Ky	F M Massie	1 845		22	4	1	1	180
Hotel Dieu-Sisters Hospital*	New Orleans	L. J O Neil	3 093	593	94	34	1	2	100
Bon Secours Hospital*	Baltimore	G Stewart	976	1 276	17	6	1	1	130
Suburban Hospital	Bethesda, Md	A. L. Riddick	1 944	263	10	5	1	1	100
Lahey Clinic	Boston	F H Lahey	4 039	24 163	48	23	23	23	125
Lawrence F Quigley Memorial Hospital	Chelsea Mass	H H Howard	1 075	644	19	16		4	200
Lynn Hospital*¹	Lynn Mass	C F Twomey	1 441	14 084	37	14	1	1	
Malden Hospital	Malden Mass	W E. Garrey	1 967		50	22	2	3	60
Quincy City Hospital*	Quincy Mass	J E. Knowlton	1 907	690	57	30	2	2	150
Detroit Memorial Hospital*¹	Detroit	J C Fremont	5 926	1 672	55	21	3	9	150

Numerical and other references will be found on page 462

26 SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered	Total Residencies Offered	Beginning Stipend (Month)
Woman's Hospital*[1]	Detroit	W E Johnston	2 397	77	33	13	1	*	180
Asbury Hospital*[1]	Minneapolis	H F Hoffert	3 438		34	11	1	1	150
Lutheran Deaconess Home and Hospital*	Minneapolis	G S Bergh	871		8				
Swedish Hospital*[1]	Minneapolis		4 727		72	22	1	6	158
Ellis Fischel State Hospital	Columbia Mo	J J Modlin	860		22	18			
Menorah Hospital Medical Center*[1]	Kansas City Mo	H Lapp	1 613		21	16	1	2	200
St Mary's Hospital*[1]	Kansas City Mo	F L Feierabend	3 318		25	15	2	2	125
Missouri Methodist Hospital*	St Joseph Mo	C Greenberg	3 698	1 789	84	27	1	1	250
Missouri Baptist Hospital*[1]	St Louis	G Rendleman	1 992		48	15	3	6	90
St Anthony's Hospital*[1]	St Louis	J E VonKaenel	3 840		62	14	1	1	150
St Luke's Hospital*[1]	St Louis	E V Mastin	2 394	1 093	27	7	2	*	200
Hackensack Hospital*[1]	Hackensack N J	A I Mader Jr	5,264	5 240	119	32	3	3	194
Monmouth Memorial Hospital*[1]	Long Branch N J	J E Maher	1 756	097	345	44	2	2	200
Mountainside Hospital[1]*	*Montclair N J*	R G *Stewart*	*4,251*	*4 921*	*72*	*21*	*1*	*3*	*100*
Fitkin Memorial Hospital*[1]	Neptune N J	O K Parry	2 148	1 596	68	25	1	2	200
Presbyterian Hospital[1]	Newark N J	C MacArthur	4 659	300	71	34	4	4	125
Muhlenberg Hospital*	Plainfield N J	B I Class and C A Hoffman	3 821	1,294	94	15	1	1	200
Mercer Hospital*[1]	Trenton N J	E B Bearsto	1,549	848	46	21	1	1	150
St. Francis Hospital*[1]	Trenton N J	L Haggerty	3 922	7 821	126	40	2	4	200
Children's Hospital[1]	Buffalo	W L Machemer	883	1 644	22	16		*	25
Mary McClellan Hospital	Cambridge N Y	D M Vickers	860	5 300	34	7	1	1	
Flushing Hospital*[1]	Flushing N Y	C M Baker	4 579	13 687	75	32	1	3	100
Gouverneur Hospital*[1]	New York City	R I Carter	1 195	11,343	82	10			90
Lebanon Hospital*[1]	New York City	B Sherwin and M Cohen	1 926		180	50	1	1	100
Mother Cabrini Memorial Hospital*	New York City	J P Alvich	1 191	526	37	10	1	1	200
New York Infirmary*[1]	New York City	A Hubert	1 428	5 694	7	3	1	1	75
Sydenham Hospital[1]*	*New York City*	S Standard	2 097	1,836	24		1	1	140
White Plains Hospital*[1]	White Plains N Y	E C Ramsdell	3 026	953	64	31	1	2	75
James Walker Memorial Hospital*	Wilmington N C	J W Hooper	2 174	8 657	49	15		2	150
City Memorial Hospital*[1]	Winston Salem N C	R T Odom	1 658	3,216	34	17	2	4	150
Kate Bitting Reynolds Memorial Hospital*	Winston Salem N C	R T Odom	2,225	7 198	52	20	1	3	150
Bismarck Hospital	Bismarck N D	R H Waldschmidt	2 037	34 108	42	21	3	3	300
St Luke's Hospital*[1]	Fargo N D								
St Thomas Hospital*[1]	Akron Ohio	A F Dorner	1 239	679	14	6	4	8	200
Deaconess Hospital[1]*	Cincinnati	L Reid and R W Good	2,881		28	6	3	3	150
Fairview Park Hospital*[1]	Cleveland	W I Smith	936	286	15	8	3	5	100
Doctors Hospital*[1]	Cleveland Heights Ohio	R R Renner	2 223		33	10	3	3	200
St. Elizabeth Hospital*	Dayton Ohio	C J Derby	6 922		74	26	2	2	250
Mercy Hospital*[1]	Hamilton Ohio	C A Levrer	1 978	577	45	19	1	1	200
Mansfield General Hospital	Mansfield Ohio								
Wesley Hospital*[1]	Oklahoma City	J H Robinson	3 941	3 730	49	32	3	3	150
St. John's Hospital*[1]	Tulsa Okla	D L Garrett	5 145		97	33	3	3	150
Providence Hospital*[1]	Portland Ore	L I Gambee	4 552		62	38	1	1	75
Hazelton State Hospital	Hazelton Pa								
Doctors Hospital*[1]	Philadelphia	F C Murphy	852	1 272	16	6			
Frankford Hospital*[1]	Philadelphia	B H Chandlee and R Lorry	1,508		45	17		2	200
Misericordia Hospital*[1]	Philadelphia	D C Geist	2 188	5 294	76	20	1	1	150
St. Joseph's Hospital*	Philadelphia								
St. Mary's Hospital*	Philadelphia	P A McCarthy	1 717	8 191	54	12			
Mercy Hospital*[1]	Wilkes-Barre Pa	W J McGuigan	1 764	1 308	19	8	2	2	100
Wilkes-Barre General Hospital*[1]	Wilkes Barre Pa	M C Rumbaugh	3,531	1 658	89	20	3	3	100
Columbia Hospital*[1]	Wilkinsburg Pa	W B Hetzel	2 084	10 244	28	6	1	2	200
Newell Hospital	Chattanooga Tenn	E T Newell Jr	1 776	21 634	58	20	3	3	400
Brackenridge Hospital*[1]	Austin Texas	G Tipton	1 418		60	28	1	1	180
St. Paul's Hospital*[1]	Dallas Texas	C B Carter	2 388	3 451	24	6	3	6	100
Harris Hospital*[1]	Fort Worth Texas	W B Swift	2 104	514	22	11	1	1	125
Memorial Hospital	Houston Texas	I E Williford	6 758	1 980	60	19	6	6	150
Southern Pacific Hospital	Houston, Texas	J R Gandy	408	5,737	9	5	1	2	125
Thomas D Dee Memorial Hospital*[1]	Ogden Utah	D W Tanner	1 324		23	10	2	2	150
Bishop De Goesbriand Hospital*[1]	Burlington Vt	Gladstone	987	63*	7	5	1	2	100
Elizabeth Buxton Hospital	Newport News, Va	R Buxton					2	2	200
Riverside Hospital*[1]	Newport News Va	B Gillespie	1 035		12	3	2	3	175
De Paul Hospital*[1]	Norfolk Va	C C Smith	3 633	1 448	59	38	1	2	125
St. Elizabeth's Hospital[1]	Richmond Va.	G W Horsely	1 192		10	7	1	2	100
Doctors Hospital*	Seattle Wash	D K Crystal	4 566		50	41	2	2	125
Providence Hospital*[1]	Seattle Wash.	R L Zech	2 093	704	12	8	2	2	110
Swedish Hospital*[1]	Seattle Wash	F Jarvis	2 923		15	6	3	3	100
St. Luke's Hospital*[1]	Spokane Wash.	N R Brown	3 052		73	42	1	1	125
Kanawha Valley Hospital*[1]	Charleston W Va	J C Condry	2 054	1 791	36	15	1	2	200
La Crosse Lutheran Hospital*[1]	La Crosse Wis	S Gundersen	2 038		13	10	1	1	150
Methodist Hospital*	Madison Wis	A S Jackson	717	340	21	11	1	1	125
Evangelical Deaconess Hospital*	Milwaukee	K Schlaepfer	4,314		23			1	250
Mount Sinai Hospital*	Milwaukee	D V Elconin	1 566	504	29	16	1	3	100
St. Luke's Hospital*[1]	Milwaukee		1 360		25	9	2	2	205
St Mary's Hospital*	Milwaukee	E W Miller	6 059		30	20	1	1	100

27 THORACIC SURGERY

The following services are approved by the Council and the Board of Thoracic Surgery Residencies in this specialty have been approved without specifying the number of years for which they are accredited The Board will give appropriate credit for training in these hospitals on an individual basis

Hospitals 50 Assistant Residencies and Residencies 117

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residencies Offered	Total Residencies Offered	Beginning Stipend (Month)
UNITED STATES ARMY									
Fitzsimons Army Hospital*	Denver Colo	R C Major	818	207	9	8			
Army Medical Center*[27]	Washington D C	J S Paul	189	272					

Numerical and other references will be found on page 462

27 THORACIC SURGERY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residency Offered	Total Residency Offered	Beginning Stipend (Month)
UNITED STATES NAVY									
U S Naval Hospital*1	St Albans N Y	C. F Storey	50		4	4			
VETERANS ADMINISTRATION									
Veterans Admin Hospital*1	Long Beach Calif	J Weinberg	165	504	25	16		2	
Veterans Admin Hospital*1	Chamblee Ga	P H Cuilfoil	265		13	8	1	2	
Veterans Admin Hospital	Hines Ill	J Head	761		24	12		3	
Veterans Admin Hospital	Rutland Heights Mass	J J Cincotti	200	21	9	5	1	1	
Veterans Admin. Hospital 1	Minneapolis	T J Kinsella			15	11			
Veterans Admin Hospital 1	Jefferson Barracks Mo	T Burford	300		16	11	1	1	
Veterans Admin Hospital 1	Castle Point, N Y	J V Comer	446					2	
Veterans Admin Hospital 1	New York City	F B Berry	177	496	16	11	1	3	
Veterans Admin. Hospital	Oteen N C	J D Murphy	1,070	105	24	17		5	
Veterans Admin Hospital 1	Cleveland	E. B Kay	124	72	6	5	1	2	
Veterans Admin Hospital	Memphis	F A. Hughes	445		24	18	1	4	
Veterans Admin. Hospital*1	McKinney Texas	J Carswell	209		15	14	1	1	
Veterans Admin Hospital*	Richmond Va.	F P Coleman	244		14	10	1	3	
Veterans Admin Hospital 1	Martinburg W Va	R K Hollingsworth	231	110	3	2	2	2	
NONFEDERAL									
Los Angeles Sanatorium	Duarte Calif	A Goldman	760		3	3	1	1	300
Highland Alameda County Hospital*1	Oakland Calif	P C Sampson						2	145
Olive View Sanatorium 1	Olive View Calif	C E. Babcock and J P Ford, Jr	551				4	4	464
National Jewish Hospital 1	Denver	J B Grow	376				1	1	200
Grace-New Haven Community Hospital New Haven Unit (University Service)*1	New Haven Conn	C E Lindskog	271		4	3		3	40
Norwich State Tuberculosis Sanatorium	Norwich Conn	W O Kelley	167		5	1	1	1	470
University Hospital*1	Augusta, Ga								
City of Chicago Municipal Tuberculosis Sanitarium	Chicago	W Lees	1,547		10	5	4	8	125
Boston Sanatorium	Boston	J Streider	85		7	4	1	3	150
University Hospital*1	Ann Arbor Mich	J Alexander	736	3,897	32	20	1	11	124
Herman Kiefer Hospital 1	Detroit	E J O Brien	453	858	15	7	4	6	307
Barnes Hospital*	St Louis	E A Graham	665		24	21	2	6	
Berthold S Pollak Hospital for Chest Diseases 1	Jersey City N J	F Bortone	364	13,311	4	2	2	3	100
Albany Hospital	Albany N Y								
Kings County Hospital*1	Brooklyn	L Hochberg	406	1,501	53	15	1	2	
Edward J Meyer Memorial Hospital*1	Buffalo	J D Stewart	141	197	14	6	1	2	100
Herman M Biggs Memorial Hospital	Ithaca N Y	R Douglass	213				3	3	250
Triboro Hospital 1	Jamaica N Y	L. Miscall			16	3	4	4	130
Bellevue Hospital Div I—Columbia University*1	New York City	F B Berry	262	279	22	5	2	3	80
Metropolitan Hospital*1	New York City	S A Thompson	94		11	2	1	2	80
Seton Memorial Hospital 1	New York City	A E W Ada	102	267	8	3	2	2	130
Homer Folks Tuberculosis Hospital 1	Oneonta N Y	A M Skinner	143	13	6	4	1	2	395
Ray Brook State Tuberculosis Hospital 1	Ray Brook N Y	J Gordon	183	26	17	2	2	3	350
Sea View Hospital 1	Staten Island N Y	L R Davidson	212	338	12	4	3	3	140
City Hospital*1	Cleveland	S O Freedlander	111	702	25	7		2	77
Benjamin Franklin Hospital	Columbus Ohio								
University of Oregon Medical School Hospitals and Clinics*1	Portland Ore	W Conklin	213		4	1	1	2	55
Episcopal Hospital*1	Philadelphia	R P Glover	104		10	6	1	1	50
Hahnemann Hospital*1	Philadelphia	C P Bailey	493	188	35	21	1	3	50
Baptist Memorial Hospital	Memphis Tenn								
Baylor University Hospital*1 73	Dallas Texas	R R Shaw	197	43	7	3	1	1	50
Firland Sanatorium 1	Seattle Wash	F J Jarvis	434		15	9	1	1	150
Leahi Hospital	Honolulu T H	P W Gebauer	276		3	2	1	1	300

28 UROLOGY

The following services are approved by the Council and the American Board of Urology

Hospitals 182 Assistant Residencies and Residencies, 545

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residency Offered	Total Residency Offered	Length of Approved Program (Years)	Beginning Stipend (Month)
UNITED STATES ARMY										
Letterman Army Hospital*	San Francisco Calif	J W Schwartz	813	2,174	9	8			2	
Fitzsimons Army Hospital*	Denver Colo	J N Furst	403	1,670	2	2			1	
Army Medical Center*27	Washington D C	J C. Kimbrough	607	3,535	6	5	2	7	3	
Brooke Army Medical Center* 8	San Antonio Tex	R J Getz	1,192	7,348	21	19			3	
Tripler Army Hospital*	Honolulu T H	C C Dodson	1,304	3,506	1	1			3	
UNITED STATES NAVY										
U S Naval Hospital*	Oakland Calif	J W Rogers	576	1,058	14	9		2	3	
U S. Naval Hospital*	San Diego Calif	P E Huth	939	4,967	7	5	2	2	4	
U S Naval Hospital*1	Bethesda Md	H J Cokely	540	2,551	12	8	2	5		
U S. Naval Hospital*	Philadelphia	F A Newton	662	1,857	13	6				
UNITED STATES PUBLIC HEALTH SERVICE										
U S Public Health Service Hospital*1	Baltimore Md	J S Haines	415	1,645	4	5	1	1	2	
U S Public Health Service Hospital*1	Staten Island N Y	C Ferguson	612	[illegible]	[illegible]	3	1	3	3	
FEDERAL SECURITY AGENCY										
Freedmen's Hospital*1	Washington D C	R F Jones	317	[illegible]	16	[illegible]		1	3	
VETERANS ADMINISTRATION										
Veterans Admin Hospital*1	Long Beach Calif	D Malcolm	1,232	[illegible]	20	16	1	3	3	
Veterans Admin Hospital*	Los Angeles Calif	G J Thomas	1,448	3,336	31	25	[illegible]	5	[illegible]	

Numerical and other references will be found on page 462.

28 UROLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
Veterans Admin Hospital	San Francisco	F Hinman and H M Weyrauch	322	264	5	4	1	3	3	
Veterans Admin. Hospital*	Newington Conn	T H Frazier	344	759	5	5	1	1	°	
Veterans Admin Hospital[1]	Washington D C	J G Lee	147	404				1	3	
Veterans Admin Hospital*[1]	Chamblee Ga	M K Bailey	630		2	1	1	2	3	
Veterans Admin Hospital	Hines Ill	F Lloyd	2 542		48	22		9	3	
Veterans Admin Hospital[1]	Wadsworth Kans	I S Brown	605		10	7	1	3	3	
Veterans Admin Hospital[1]	Louisville	M I Schwalbe	734	1 975	11	4	1	2	2	
Veterans Admin Hospital	New Orleans	E Burns	396	460	11	6	1	3	3	
Veterans Admin Hospital[1]	Fort Howard Md	H J Meisel	312	161	7	6		1	3	
Veterans Admin Hospital[1]	Boston (West Roxbury)	S Vose	340	477	8	7	1	2	2	
Veterans Admin Hospital[1]	Framingham Mass	H S Talbot	446	1 258	8	7	1	2	3	
Veterans Admin Hospital	Minneapolis	C D Creevy	939	900	23	15	2	2		
Veterans Admin Hospital[1]	Jefferson Barracks Mo	J J Cordonnier	664		8	7	1	4	3	
Veterans Admin Hospital	Lincoln Nebr	A D Munger	373		7	6	1	2	3	
Veterans Admin Hospital[1]	Brooklyn	H C Harlin	960		14	6	1	3	3	
Veterans Admin Hospital[1]	New York City	A L Dean	869	579	36	25	1	4	3	
Veterans Admin Hospital[1]	Cleveland	J J Joelson	533	385	20	14	1	3	3	
Veterans Admin Hospital	Dayton Ohio	H I Berman	421	387	22	9	1	3	3	
Veterans Admin Hospital	Portland Ore	P B Potampa	505		10	7		1	3	
Veterans Admin Hospital[1]	Aspinwall Pa	C A Kuehn	435		28	11		3	3	
Veterans Admin Hospital	Columbia S C	H E Wyman	728	675	10	5	1	4	3	
†Veterans Admin Hospital	Memphis	W S Bradley Jr	806	423	9	5	1	3	3	
Veterans Admin Hospital[1]	Dallas Tex	R C Smith	289		5	5	1	2	3	
Veterans Admin Hospital*[1]	Houston Tex	J R Blundell	385		15	11	1	2	2	
Veterans Admin Hospital*[1]	McKinney Tex	P A Duff	381	1 300	7	3	1	1	3	
Veterans Admin. Hospital[1] [43]	White River Jct Vt	W L McLaughlin	1 019	1 686	9	6	1	2	3	
Veterans Admin. Hospital*	Richmond Va	R C Bunts	1 001	407	9	3	1	3	3	
Veterans Admin Hospital[1]	Milwaukee	J C Sargent	478	531	11	8	3	3	3	

NONFEDERAL

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
†Carraway Methodist Hospital*[1]	Birmingham Ala	L Timberlake	320	2 139	6	4	1	3	3	150
Jefferson Hillman Hospital*	Birmingham Ala	B Barelare	535	5 263	20	7	1	3	3	50
Lloyd Noland Hospital	Fairfield Ala								1	
Los Angeles County Hospital*[1]	Los Angeles	J J Crane	2 598	15 850	194	70	7	7	3	165
Presbyterian Hospital Olmsted Memorial*	Los Angeles	T O Powell	739		21	9	1	2	2	100
White Memorial Hospital*	Los Angeles	R W Barnes	509	6 172	21	15		1	3	120
San Diego County General Hospital*[1]	San Diego Calif	R J Prentiss	377	2 711	25	12	1	3	3	125
Franklin Hospital*[1]	San Francisco	F Hinman	715	427	8	4	1	3	3	100
Southern Pacific General Hospital*[1]	San Francisco		618		4	2	1	2	2	150
Stanford University Hospitals*[1] [85]	San Francisco	H M Weyrauch	581	3 412	7	3		2	3	50
University of California Hospital*[1] [85]	San Francisco	F Hinman	456	7 087	10	8		1	3	75
Santa Clara County Hospital*[1]	San Jose Calif	E Henderson	228	2 028	10	9		1	2	235
Harbor General Hospital*	Torrance Calif	J W Dorsey	416	1 130	28	16	1	2	3	165
University of Colorado Medical Center										
Colorado General Hospital*[1]	Denver	D R. Higbee	269	3 089	7	6	1	2	3	75
Denver General Hospital*[1] [24]	Denver	D E Newland	335		22	14		1	3	75
Grace New Haven Community Hospital										
New Haven Unit (University Service)*[1]	New Haven Conn	C Deming	678	2 481	21	6		2	3	40
Hospital of St Raphael*[1]	New Haven Conn	L L Maurer	530	244	11	1	1	3	3	75
Waterbury Hospital*[1]	Waterbury Conn	H J Stettbacher	588	221	17	9	1	2	2	100
Gallinger Municipal Hospital*[1]	Washington D C	L Lewis and L Culbertson	355	2 113	39	11	1	3	3	100
Duval Medical Center*	Jacksonville Fla	R B McIver	228	1 819	11	4	1	1	2	150
St Vincent's Hospital*[1]	Jacksonville Fla	R B McIver	510		8	1		2	2	125
Jackson Memorial Hospital*[1]	Miami Fla	M M Coplan	1 033	3,288	20	11	1	2	2	60
Orange Memorial Hospital*[1]	Orlando Fla	L M Orr	773		16	11	1	2	2	210
Grady Memorial Hospital*[1] [74]	Atlanta Ga	M K Bailey	775	20 426	38	19	2	6	3	*0
University Hospital*[1]	Augusta Ga	J R Rinker	480	955	19	8		2	2	40
Alexian Brothers Hospital*	Chicago	J A Loef	389		19	7	1	1	1	125
Cook County Hospital*	Chicago	H C Rolnick	1 649	2,570	122	12		3	3	32
Mercy Hospital*[1]	Chicago	H E Landes	460	1 792	19	6		1	3	25
Michael Reese Hospital*[1]	Chicago	I Shapiro	539	2,226	13	8	1	3	3	25
Mount Sinai Hospital*	Chicago	L. A. Maslow	393	1,247	21	3	1	1	2	50
Presbyterian Hospital*	Chicago	N J Heckel	837	3 762	7	7	2	4	3	25
Provident Hospital*[1]	Chicago	W S Grant	147		4	3	1	1	2	50
St Luke's Hospital*[1]	Chicago	W J Baker	565	2 118	14	9		2	3	25
University of Chicago Clinics*	Chicago	C B Huggins	285	5 158	11	7		1	3	25
Wesley Memorial Hospital*[1]	Chicago	V J O'Conor	869		10	5	1	1	3	*5
†Evanston Hospital*[1]	Evanston Ill	J L Farrell	277		7	0	1	1	3	50
St. Francis Hospital*	Evanston Ill	B E Fillis	616	47	12	8	1	1	1	150
St Francis Hospital*[1]	Peoria Ill	A. Sprenger	774	318	26	13	1	2	3	100
Indianapolis General Hospital*[1]	Indianapolis	W N Wishard	323	2 862	22	9	1	2	3	80
Indiana University Medical Center*[1]	Indianapolis	H O Mertz	317	1 953	9	7	1	3	3	150
Methodist Hospital*	Indianapolis	R. D Howell	1 619		26	10	1	2	2	260
University Hospitals*[1]	Iowa City	R H Flocks	1 661	1 472	43	21	2	5	3	60
University of Kansas Medical Center*[1]	Kansas City, Kans	W Valk	728	2,375	21	15	1	3	3	100
St. Joseph Hospital*[1]	Lexington Ky	E H Ray	623		6	6	1	1	1	140
Louisville General Hospital*[1]	Louisville Ky	R. Lich, Jr	313	4 717	20	7	1	1	3	50
Charity Hospital of Louisiana*[1]	New Orleans		2 598	20 771	94	40	5	13	3	25
Ochsner Foundation Hospital*[1]	New Orleans	E Burns	324	10 929	2	2	1	3	3	125
Touro Infirmary*[1]	New Orleans	E Vickery	665	3,506	11	8	1	1	3	17
Shreveport Charity Hospital*[1]	Shreveport La	R K Womack	612	3,314	28	16	1	4	3	60
Johns Hopkins Hospital*	Baltimore	W W Scott	1 102	5,203	23	12	5	9	3	41 66
†Sinai Hospital*[1]	Baltimore	B S. Abeshouse	492		20	11	1	3	3	35
Beth Israel Hospital*[1]	Boston	G C Prather	355	2 328				1	2	83 33
Boston City Hospital*[1]	Boston	G C Prather	482	7 744	12	3		4	3	140
Lahey Clinic	Boston	E. E. Ewert	396	5,582	7	1	3	9	3	125
Massachusetts General Hospital*	Boston	F H Colby	467	5 142	25	13	1	3	3	41 66
Massachusetts Memorial Hospital*	Boston	S N Vose	422	1,297	5	3	1	3	3	80
New England Center Hospital*[1]	Boston	W F Leadbetter	234		5	5		2	3	83 33
†Peter Bent Brigham Hospital*	Boston	J H Harrison		2 072			1	1	3	41 66
Mount Auburn Hospital*[1]	Cambridge Mass	H Chamberlin	216	330	6	2	1	1	1	125
Worcester City Hospital*[1]	Worcester Mass	G C Tully	557		26	8	2	2	2	100
University Hospital*[1]	Ann Arbor Mich	R Nesbit	1 194	8,504	26	16	3	6	3	121
City of Detroit Receiving Hospital*[1]	Detroit	G Sewell	696	3 918	37	22	1	2	3	217
Grace Hospital*	Detroit	L W Hull	1 172	761	20	11	1	1	3	225
Harper Hospital*	Detroit	G Sewell	1,313	1 153	27	16	1	3	3	230
Henry Ford Hospital*[1]	Detroit	J K. Ormond	634	16 659	13	10	1	3	3	225

Numerical and other references will be found on page 462.

28 UROLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered[8]	Total Residences Offered[8]	Length of Approved Program (Years)	Beginning Stipend (Month)
Wayne County General Hospital and Infirmary*1	Eloise Mich	W L. Sherman	531		80	26	1	2	3	252 33
Minneapolis General Hospital*1	Minneapolis	T H Sweetser	272	1,376	12	7	1	1	3	125
St. Mary s Hospital*	Minneapolis	T H Sweetser	547		20	12		1	3	200
University of Minnesota Hospital*1	Minneapolis	C D Creevy	816		16	13	1	3	3	
Mayo Foundation	Rochester Minn	G J Thompson					5	14	3	135
Ancker Hospital*1	St. Paul	F E B Foley	348	1 686	31	23	1	3	3	91 50
Charles T Miller Hospital*1	St Paul	P F Donahue and F E B Foley	456	597	8	6		1	3	115
Kansas City General Hospital No 1*	Kansas City Mo	L S Brown	564	2 371	35	15	1	3	3	75
Research Hospital*1	Kansas City Mo	R L Hoffman	1 542	2 318	6	4	1	3	3	150
Barnes Hospital*	St Louis	D K Rose	918	4 725	18	13	2	3	3	
Homer G Phillips Hospital*1	St Louis	C Wattenberg	455	3 123	30	9	2	4	3	132 80
Missouri Baptist Hospital*1	St. Louis	C E. Burford	955		17	5	1	1	1	90
Missouri Pacific Hospital	St. Louis	A. E Vitt	400	1 622	18	6		1	2	115
St. Louis City Hospital*1	St Louis	C Wattenberg and W I Melick	482	4 386	65	22	1	3	3	123 80
St Mary s Group of Hospitals*1	St Louis	C E Burford	663	3 075	14	7	1	3	3	35
Atlantic City Hospital*	Altantic City N.J	C H Shivers	319	3 032			1	1	2	150
Bayonne Hospital and Dispensary*	Bayonne N.J	A. J Balsamo	664	656	7	5	1	2	3	100
Cooper Hospital*1	Camden N.J	D F Bentley Jr	543	3 412	19	5	1	2	2	83 33
Jersey City Hospital*	Jersey City N.J	E J Daly	420	1 667	34	12	1	3	3	35
Newark City Hospital*1	Newark N.J	C O Crowley	490	3,360	50	8	1	2	3	100
Orange Memorial Hospital*1	Orange N.J	J K. DeVries and W P Burpeau	440	647	24	11	1	1	2	100
Albany Hospital*	Albany N Y	J L Heslin	673	1 124	15	14	1	1	3	60
Jewish Hospital*1	Brooklyn	L. Baretz	696	1 535	14	3		3	2	65
Kings County Hospital*1	Brooklyn	F L. Senger	1 567	4 870	158	26	1	3	3	
Long Island College Hospital*	Brooklyn	F L Senger	640	2 073	16	5	1	3	3	25
Methodist Hospital*1	Brooklyn	O P Schoenemann	548	921	8	2	1	1	3	25
Buffalo General Hospital*	Buffalo	O J Oberkircher	528	1 688	19	9	2	2	3	25
Edward J Meyer Memorial Hospital*	Buffalo	G E Slotkin	467	1 267	41	18	1	3	3	100
Millard Fillmore Hospital*1	Buffalo	G E Slotkin	641	14	19	9	1	3	3	50
Queens General Hospital*1	Jamaica N Y	B Derran	648	6 529	52	29	1	3	3	80
Bellevue Hospital Div II Cornell University*1	New York City	J W Draper	697	8 095	32	5	1	4	3	50
Beth Israel Hospital*1	New York City	S F Wilhelm	870	1 611	14	1	1	3	3	50
French Hospital*1	New York City	J D Cooney	405	1,583	7	2	1	3	3	20
Metropolitan Hospital*1	New York City	T Kirwin	579	2 566	34	8	1	2	2	60
Morrisania City Hospital*1	New York City	J Duff	674	2 707	26	11	1	4	3	80
Mount Sinai Hospital*1	New York City	G Oppenheimer	1 020	4 264	19	4	3	3	3	50
New York City Hospital*	New York City	J H Morrissey	309	2 794	22	8	1	2	2	60
New York Hospital*1	New York City	V Marshal	1 536	12 210	23		2	5	3	75
New York Polyclinic Medical School and Hospital*	New York City	J S Ritter	447		5	2	1	2	3	75
Presbyterian Hospital*	New York City	G F Cahill	1,367	9 463	20	12	6	18	3	208
Roosevelt Hospital*1	New York City	S. A. Beisler	548		16	5	1	3	3	
St Clare s Hospital*	New York City	G A. Fiedler	396	621	7	1	1	3	3	25
St. Luke s Hospital*1	New York City	J H Taylor	610	3 840	26	6	1	2	3	60
University Hospital*	New York City	R Hotchkiss	517	2 402	5	2		2	3	80
Strong Memorial Rochester Municipal Hospitals*1	Rochester N Y	W W Scott	770	3 350			1	3	3	41 66
Sea View Hospital 1	Staten Island, N Y	A. J Greenberger	734		6		1	1	1	140
Charlotte Memorial Hospital*1	Charlotte N C	H W McKay	1 291	146	10	5	1	2	3	100
Duke Hospital*1	Durham N C	E P Alyea	606	4 011	11	4	2	4	3	
Watts Hospital*	Durham N C	W M Coppridge	587	162	6	3	1	2	2	50
North Carolina Baptist Hospital*1	Winston Salem N C	F K Garvey	593	2 468	14	0	1	3	3	41 66
Cincinnati General Hospital*1	Cincinnati	P G Smith	736	4 817	39	23	1	2	2	
City Hospital*1	Cleveland	H Trattner	494	4 014	25	9		2	3	77
Cleveland Clinic Hospital 1	Cleveland	C C Higgins	1 204	20 402	17	7	2	12	3	
University Hospitals*1	Cleveland	J J Joelson	754	3 613	9			1	2	
Ohio State University Hospital*1	Columbus Ohio	W N Taylor	504	1 924	19	13	1	4	3	50
Huron Road Hospital*1	East Cleveland Ohio		501	282	13	4			2	
St Vincent s Hospital*1	Toledo Ohio	L. P Dolan	859		18	9	1	3	3	125
University Hospitals*	Oklahoma City	B A. Hayes	205	3 120	10	4	1	1	2	50
Hillcrest Memorial Hospital*1	Tulsa Okla	J O Akin	300		9	5	1	1	3	75
St. John s Hospital*	Tulsa Okla	H S Browne	824		15	9	1	2	2	150
St Vincent s Hospital*1	Portland Ore	J R Hand	840		19	9	1	2	2	75
University of Oregon Medical School Hospitals and Clinics*1	Portland Ore	C V Hodges	354	3 540	26	17	1	4	3	85
Allentown Hospital*1	Allentown Pa	W C Masonheimer	784	162	10	6	1	1	2	100
George F Geisinger Memorial Hospital and Clinic*1	Danville Pa	W L Buchert	902	8 391	14	9	1	2	3	100
St Vincent s Hospital*	Erie Pa		1 054	4 959			1	3	3	50
Harrisburg Hospital*1	Harrisburg Pa	S. L. Grossman	533	3,279	16	7	1	2	2	
Episcopal Hospital*1	Philadelphia	G D Shoup	247	959	6	2	1	1	2	50
Graduate Hospital of the University of Pennsylvania*1	Philadelphia	J O Birdsall	189	5 674	3	2	1	1	2	
Hahnemann Hospital*1	Philadelphia	E W Campbell	856	2 617	12	6	1	3	3	50
Hospital of the University of Pennsylvania*1	Philadelphia	B P Hughes	765	2 602	13	6		3	3	100
Jefferson Medical College Hospital*1	Philadelphia	D M Davis	1 035	5 509	14	5	3	3	3	
Jewish Hospital*1	Philadelphia	J B Lownes	501	513	20	7	1	2	1	50
Lankenau Hospital*1	Philadelphia	C A W Uhle	397	833	3	1	1	1	2	50
Mount Sinai Hospital*1	Philadelphia	M Muschat and I J Carp	428	292	2	1	1	1	2	50
Pennsylvania Hospital*	Philadelphia		596	2 717	12	8		2	3	20
Philadelphia General Hospital*1	Philadelphia	L. McCrea	596		42	20	1	3	3	75
Presbyterian Hospital*23	Philadelphia	F G Harrison	403	3,525	20	19	1	2	3	25
Temple University Hospital*1	Philadelphia	K. B Conger	535	1,527	15	11		2	3	
Allegheny General Hospital*	Pittsburgh	J C Burt	512	460	11			2	3	100
Mercy Hospital*1	Pittsburgh	E J McCague	469	761	6	2			3	100
Pittsburgh Medical Center 76	Pittsburgh	J J Lee	651	2 409	5	1			3	41 66
Robert Packer Hospital*1	Sayre Pa	W Baurys	447	866	19	17		1	3	150
Mercy Hospital*	Wilkes-Barre Pa	F P Judge	329	1 750	10	4	1	1	1	75
Rhode Island Hospital*1	Providence R I	H K. Turner	659	1 673	25	10	1	2	2	60
Roper Hospital*1	Charleston S C	J J Ravenel	743	1,552	6	2	1	3	3	50
Orangeburg Regional Hospital*	Orangeburg S C	L P Thackston	1 623	8,531	14	9	2	4	3	100
Baptist Memorial Hospital*	Memphis	A. L. Herring	1 240	492	20	0		1	1	75
John Gaston Hospital*	Memphis	T D Moore	783	6 093	28	16	2	5	3	
St Joseph Hospital*1	Memphis	C D Allen	337	213	17	4	1	3	3	100
Nashville General Hospital*	Nashville	H C Gayden	2,6	1,690	17	4	1	2	2	100
Parkland Hospital*1	Dallas Tex	H Spence	432	3 618	22	10		2	3	
University of Texas Medical Branch Hospitals*1 John Sealy Hospital	Galveston Tex	R E Cone	464	5 166	17	14	1	3	3	75
Hermann Hospital*1	Houston Tex	C M Crigler	1 090	1,399	12	5	1	3	3	75
Jefferson Davis Hospital*	Houston Tex	R Blundell	490	5,361	41	16		2	3	50

Numerical and other references will be found on page 462.

28 UROLOGY—Continued

Name of Hospital	Location	Chief of Service	Inpatients Treated	Outpatient Visits	Deaths on Service	Autopsies	First Year Residences Offered*	Total Residences Offered*	Length of Approved Program (Years)	Beginning Stipend (Month)
Wichita Falls Clinic Hospital★	Wichita Falls Tex	J R Reagan	295	9 402	2		1	1	3	300
Mary Fletcher Hospital★1 75	Burlington Vt	W M Flagg	407	8	10	9	1	3	3	60
University of Virginia Hospital★	Charlottesville Va	S A. Vest	681	2 732	17	8	2	5	3	50
Medical College of Virginia—Hospital Division★1	Richmond Va	A. I Dodson	715	2,301	20	14	1	3	3	46.50
St. Mary's Hospital★	Huntington W Va	L R Harwood	774		23	5	1	1	3	125
La Crosse Lutheran Hospital★1	La Crosse Wis	A Gundersen	405		9	3	1	1	1	150
Madison General Hospital★	Madison Wis	I R Sisk	793		14	2	1	1	3	50
State of Wisconsin General Hospital★	Madison Wis	J B Wear	523		15	13	1	3	3	25
Milwaukee County Hospital★1	Milwaukee	R. S Irwin	1 019	2,228	60	21	1	3	2	50

Numerical and Other References

★ Indicates hospitals approved for training interns

† Indicates temporary approval

1 Residencies open to women

2 Approved for training in Syphilology only

3 Includes one year fellowship in Immundo-Hematology

4 May include one year in the Medical Research Institute (and Postgraduate School)

5 Approved as offering acceptable affiliated training (maximum three months) in concurrence with the American Board of Pediatrics

6 Maximum of six months training in Contagious Diseases accepted by the American Board of Pediatrics

7 May include six months assignment to Department of Rehabilitation and Physical Medicine approved program

8 Includes Fellowships

9 Clinical data included in Neurology

10 Includes one year Fellowships available in psychosomatic medicine

11 Clinical data included in Otolaryngology

12 Clinical data included in Psychiatry

13 May include training Home Care Service

14 May include fellowship training in Cardiology

15 Includes six months assignment Ohio State University Medical School Columbus Ohio

16 May include assignment to the Institute for Cancer Research and Lankenau Hospital Research Institute Philadelphia

17 May include one year of fellowship in division of Endocrinology

18 Primary service at Chicago Tumor Institute

19 Affiliated with Bingham Associates Laboratory Holyoke Massachusetts

20 Affiliated with Neurological Institute New York City

21 Affiliated with Institute of Ophthalmology

22 May include one year fellowship in the Department of Oncology

23 Includes assignment at Urologic Clinic Philadelphia

24 Apply Office of Graduate Medical Education University of Colorado Medical Center

25 Apply Medical College State of South Carolina

26 May include training in Allergy

The following hospitals offer acceptable training which is integrated with or contributing to the fully approved program in the listing of which the footnote reference appears

27 Walter Reed General Hospital and Army Medical Department Research and Graduate School.

28 Brooke General Hospital 4th Army Medical Laboratory and Medical Field Service School

29 Veterans Administration Hospital Newington Conn

30 Beverly Hospital Beverly Mass

31 Children's Orthopedic Hospital Seattle Wash

32 May include one year of training in the Department of Surgical Pathology

33 Milwaukee County Hospitals and Institutions

34 Cowell Memorial Hospital Berkeley Calif

35 Arlington Hospital Arlington Va

36 May include one year of training in Chronic Diseases at Jewish Hospital Roxbury or Holy Ghost Hospital Cambridge Mass

37 University of California San Francisco

38 Nebraska Methodist Hospital Omaha

39 Allegheny Hospital Cumberland Md

40 Norton Infirmary and Veterans Administration Hospital Louisville General Hospital Louisville Ky

41 Good Samaritan and St Vincent's Hospital Portland Oregon

42 Veterans Administration Hospital Aspinwall Pa

43 Mary Hitchcock Memorial Hospital Hanover N H

44 Shriners Hospital for Crippled Children Salt Lake City

45 Louisville General Hospital and Louisville Children's Hospital

46 Alexandria Hospital Alexandria Va

47 St Vincent's Infant and Maternity Hospital Chicago

48 Booth Memorial Home and Hospital, Chicago

49 Sloan Hospital for Women New York City

50 Milwaukee Hospital and Martha Washington Home Milwaukee

51 Children's Hospital of Philadelphia.

52 Minneapolis General Hospital and Veterans Administration Hospital Minneapolis

53 Includes service at McMillan Hospital St. Louis

54 St Francis Hospital Colorado Springs Colo

55 Roseland Community Hospital Chicago

56 Free Hospital for Women Brookline Mass

57 Bryan Memorial Hospital Lincoln Nebr

58 St Agnes Hospital White Plains N Y

59 Crouse Irving Hospital Hospital of the Good Shepherd Syracuse Memorial Hospital Syracuse Psychopathic Hospital

60 South Bend Medical Foundation South Bend Ind.

61 Children's Memorial Hospital Omaha Nebr

62 Babies Hospital New York City

63 Philadelphia Hospital for Contagious Diseases

64 Yale Psychiatric Clinic, Department of University Health Division of Psychiatry (Fry) Child Study Center (Senn), Newington Veterans Admin Hospital Connecticut State Hospital Fairfield State Hospital Norwich State Hospital.

65 University of Louisville School of Medicine, includes services at the U.S.P H. Hospital Lexington Ky the Mental Hygiene Clinic Louisville Ky and the Norton Memorial Infirmary Louisville Ky

66 Minneapolis General Hospital Veterans Admin Hospital Minneapolis and Veterans Admin. Hospital St. Cloud Minn

67 Longview State Hospital Cincinnati Ohio

68 Institute of Pennsylvania Hospital Philadelphia.

69 Veterans Administration Hospital Nashville Tenn

70 May include six months training at Children's Memorial Hospital

71 Genesee Hospital Rochester N Y

72 Children's Hospital of Philadelphia

73 City County Hospital Dallas Texas

74 Emory University Hospitals and Clinic Emory University Ga

75 Bishop DeGoesbriand Hospital Burlington Vt

76 Presbyterian Hospital Woman's Hospital, Eye and Ear Hospital, Elizabeth Steele Magee Hospital Children's Hospital and Western Psychiatric Institute and Clinic Pittsburgh.

77 Dr W H Groves Latter Day Saints Hospital Holy Cross Hospital St Mark's Hospital Salt Lake County General Hospital Veterans Admin Hospital Salt Lake City

78 Veterans Admin Hospital Legion Texas

79 Zem Zem Hospital Erie Pa

80 Passavant Hospital Chicago

81 Ancker Hospital St Paul Minn

82 Franklin Hospital San Francisco

83 Woodlawn Hospital Dallas Texas (Pulmonary Diseases)

84 Hospital for Special Surgery New York City

85 San Francisco Hospital San Francisco

HOSPITALS APPROVED FOR RESIDENCY TRAINING

Number of Hospitals, 1120 Number of Programs 4368

Name of Hospital	Location	Approved Residencies
Baptist Hospital	Birmingham Ala	Path.
Carraway Methodist Hospital	Birmingham Ala	Int Med. Obst Ped. Surg Urol.
Children's Hospital	Birmingham Ala	Ped.
Jefferson-Hillman Hospital	Birmingham Ala	Anes Derm Syph. Int Med Neuro Surg Ob-Gyn Ophth., Otol. Ortho Surg Path. Ped Psych. Rad. Surg, Urol.
Lloyd Noland Hospital	Fairfield Ala	Anes Derm Syph. Int Med Obst Ortho Surg Path Ped Surg Urol
City Hospital	Mobile Ala	Int Med Ortho Surg Ped Surg.
Veterans Admin. Hospital	Tuskegee Ala	Int Med Ophth. Psych. Rad Surg
Good Samaritan Hospital	Phoenix, Ariz	Ob-Gyn.
Memorial Hospital	Phoenix Ariz	Int. Med Obst Rad Surg
St Joseph s Hospital	Phoenix, Ariz	Surg
St Mary s Hospital and Sanatorium	Tucson Ariz	Int Med
Tucson Medical Center	Tucson Ariz	Int. Med Surg
Army Navy General Hospital	Hot Springs Ark	Surg.
Leo N Levi Memorial Hospital	Hot Springs Ark	Gen'l Pract
Arkansas Baptist Hospital	Little Rock Ark	Int Med., Ophth Surg
Arkansas Children s Home and Hospital	Little Rock Ark	Ortho Surg
St Vincent Infirmary	Little Rock, Ark	Ob-Gyn Surg
University Hospital	Little Rock, Ark	Int. Med Ob-Gyn Path Ped Rad, Surg
Veterans Admin Hospital	North Little Rock Ark	Psych.
Agnews State Hospital	Agnew Calif	Psych
Kern General Hospital	Bakersfield Calif	Gen l Pract Int Med Path Ped.
Herrick Memorial Hospital	Berkeley Calif	Anes Int. Med. Path Psych Surg
Compton Sanitarium	Compton Calif	Psych.
Los Angeles Sanatorium	Duarte Calif	Pul. Dis. Thor Surg
San Joaquin General Hospital	French Camp Calif	Int Med Ob-Gyn Ped Rad Surg
General Hospital of Fresno County	Fresno Calif	Int. Med. Ophth Ped Rad Surg
Glendale Sanitarium and Hospital	Glendale Calif	Int Med Path Surg
Napa State Hospital	Imola Calif	Psych.
Arroyo-Del Valle Sanatorium	Livermore Calif	Pulm. Dis
Loma Linda Sanitarium and Hospital	Loma Linda Calif	Path
Seaside Memorial Hospital	Long Beach Calif	Int. Med. Ob-Gyn Ped. Rad Surg
Veterans Admin. Hospital	Long Beach Calif	Card Dis Gastro, Int Med Neur Neuro Surg Ophth., Otol Path., Phys Med. Psych. Pul Dis Rad Surg Thor Surg, Urol
Barlow Sanatorium	Los Angeles Calif	Pul. Dis.
California Babies and Children s Hospital	Los Angeles Calif	Ped.
California Hospital	Los Angeles Calif	Int Med. Path. Surg
Cedars of Lebanon Hospital	Los Angeles Calif	Int Med., Neur Surg Path. Rad Surg
Childrens Hospital	Los Angeles Calif	Otol. Ortho Surg Path. Ped
Eye and Ear Hospital	Los Angeles Calif	Ophth Otol
Hospital of the Good Samaritan	Los Angeles Calif	Int. Med Path. Rad Surg
Los Angeles County Hospital	Los Angeles Calif	Gen'l. Pract., Anes Derm Syph. Int Med. Neur Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path. Ped., Phys Med Psych. Rad., Surg Urol
Methodist Hospital of Southern California	Los Angeles Calif	Gen l Pract.
Orthopedic Hospital	Los Angeles Calif	Ortho. Surg
Presbyterian Hospital-Olmsted Memorial	Los Angeles Calif	Int Med., Mal. Dis Ob-Gyn Urol
Queen of Angels Hospital	Los Angeles Calif	Int Med., Ob.-Gyn Path. Ped Rad. Surg
St Vincent s Hospital	Los Angeles Calif	Int Med., Rad
Santa Fe Coast Lines Hospital	Los Angeles Calif	Surg
Veterans Admin Hospital	Los Angeles Calif	Anes Derm. Syph. Int Med. Neur Neuro Surg Ophth. Otol Ortho Surg, Path. Psych Rad Surg Urol
White Memorial Hospital	Los Angeles Calif	Anes. Derm. Syph Int Med. Neur., Neuro Surg Ob Gyn. Ophth Otol Ortho Surg Path Ped Phys Med Rad. Surg Urol
Bret Harte Sanatorium	Murphys Calif	Pul Dis
Norwalk State Hospital	Norwalk, Calif	Psych.
Children s Hospital of the East Bay	Oakland Calif	Ped
Highland Alameda County Hospital	Oakland Calif	Int Med. Ob.-Gyn Ortho Surg Path. Ped Rad Surg Thor Surg
Peralta Hospital	Oakland, Calif	Surg.
Permanente Foundation Hospital	Oakland Calif	Gen'l Pract Int Med Ob-Gyn Path. Ped Surg.
Samuel Merritt Hospital	Oakland Calif	Anes., Int Med. Ob-Gyn Ortho Surg Surg
U S Naval Hospital	Oakland, Calif	Anes, Int. Med Ob-Gyn Ophth Otol Ortho Surg Path Ped Psych Rad. Surg. Urol
Olive View Sanatorium	Olive View Calif	Pul Dis Thor Surg
Veterans Admin Hospital	Palo Alto Calif	Psych
Collis P and Howard Huntington Memorial Hospital	Pasadena Calif	Int Med Mal Dis Obst Path. Rad Surg
Patton State Hospital	Patton Calif	Psych.
Sutter General Hospital	Sacramento Calif	Rad.
Monterey County Hospital	Salinas Calif	Gen'l Pract
San Bernardino County Charity Hospital	San Bernardino, Calif	Path Surg
Mercy Hospital	San Diego Calif	Int Med Ob-Gyn Path, Surg
San Diego County General Hospital	San Diego Calif	Int Med. Ob-Gyn Ophth Otol. Ortho Surg Path Ped Pul Dis Rad. Surg, Urol.
U S Naval Hospital	San Diego Calif	Derm Syph. Int Med. Ob Gyn Ophth Otol Ortho Surg Path Psych Rad Surg. Urol
Children s Hospital	San Francisco Calif	Anes Con Dis Int. Med Ob-Gyn., Otol Ortho Surg Ped Rad Surg
Franklin Hospital	San Francisco Calif	Anes Int. Med Neuro Surg. Ophth Ortho Surg Path Plas Surg Rad Surg, Urol
French Hospital	San Francisco Calif	Anes Int Med Path Surg
Green s Eye Hospital	San Francisco Calif	Ophth
Langley Porter Clinic Hospital	San Francisco Calif	Psych.
Letterman Army Hospital	San Francisco Calif	Anes., Card Dis Derm. Syph Gastro Int Med Neur Ob-Gyn Ophth Otol. Ortho Surg Path Ped Phys Med Psych Rad Surg Urol
Mary s Help Hospital	San Francisco Calif	Int Med Ob-Gyn Surg
Mount Zion Hospital	San Francisco Calif	Int Med. Path Ped Psych Surg.
St Francis Hospital	San Francisco Calif	Gen l Pract Obst Plas Surg Rad
St Joseph s Hospital	San Francisco Calif	Anes Int. Med Ob-Gyn Ortho Surg Surg
St Luke s Hospital	San Francisco Calif	Int Med Path. Surg.
St Mary s Hospital	San Francisco Calif	Int Med. Obst. Ortho Surg Ped Rad Surg
San Francisco Hospital	San Francisco Calif	Int Med Ob-Gyn Ortho Surg Pul. Dis Surg
Shriners Hospital for Crippled Children	San Francisco Calif	Ortho Surg
Southern Pacific General Hospital	San Francisco Calif	Int Med Surg Urol
Stanford University Hospital	San Francisco Calif	Anes Derm Syph Int Med Ob-Gyn Ophth Otol Ortho Surg. Path Ped. Psych. Rad Surg Urol
U S Public Health Service Hospital	San Francisco Calif	Int Med Surg
University of California Hospital	San Francisco Calif	Anes Derm. Syph Int Med. Neur Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path Ped. Rad Surg. Urol.
Veterans Admin Hospital	San Francisco Calif	Anes Int Med Neur Neuro Surg Ophth Otol. Ortho Surg Path Rad Surg Urol
Santa Clara County Hospital	San Jose Calif	Int Med Ob-Gyn Ortho Surg Path Pul Di Surg Urol
Fairmont Hospital of Alameda County	San Leandro Calif	Int Med. Pul Di
Community Hospital of San Mateo County	San Mateo Calif	Gen l Pract Int Med. Surg
Santa Barbara Cottage Hospital	Santa Barbara Calif	Int Med Path. Rad Surg
St John s Hospital	Santa Monica Calif	Ob-Gyn. Surg.
Santa Monica Hospital	Santa Monica Calif	Rad
Sonoma County Hospital	Santa Rosa Calif	Gen l Pract Ortho Surg

HOSPITALS APPROVED FOR RESIDENCY TRAINING—*Continued*

Name of Hospital	Location	Approved Residencies
Braewood Sanitarium	South Pasadena Calif	Psych
Pacific Colony (State Hospital)	Spadra Calif	Psych
Tulare-Kings Counties Joint Tuberculosis Hospital	Springville, Calif	Pul Dis
Harbor General Hospital	Torrance Calif	Int Med Ob Gyn Ped Surg Urol
Glockner Penrose Hospital	Colorado Springs Colo	Path Rad.
St Francis Hospital	Colorado Springs Colo	Gen l Pract Rad.
Childrens Hospital	Denver Colo	Ortho Surg Path. Ped Surg
University of Colorado Medical Center		
Colorado General Hospital	Denver Colo	Anes Derm Syph Gen l Pract Int Med Ob Gyn Ophth. Otol. Ortho Surg Path. Ped Phys Med Rad Surg Urol.
Colorado Psychopathic Hospital	Denver Colo	Psych
Denver General Hospital	Denver Colo	Anes Gen l Pract Int Med Ob-Gyn Otol Ortho Surg Path Ped. Rad. Surg Urol.
Fitzsimons Army Hospital	Denver Colo	Anes Card Dis Int Med Neur Ob-Gyn. Ophth. Ortho Path. Ped., Phys Med Psych. Pul Dis Rad Surg Thor Surg Urol.
Mercy Hospital	Denver Colo	Int. Med Surg
National Jewish Hospital	*Denver Colo*	*Pul. Dis Thor Surg*
Presbyterian Hospital	Denver Colo	Path, Rad Surg
St Anthony Hospital	Denver Colo	Int Med Surg
St. Joseph's Hospital	Denver Colo	Int. Med Ob-Gyn Surg
St Luke's Hospital	Denver Colo	Path Rad Surg
Veterans Admin Hospital	Fort Logan Colo	Anes Int Med Ortho Surg Path Rad Phys Med Surg
Colorado State Hospital	Pueblo Colo	Int Med Path Psych Surg
Corwin Hospital	Pueblo Colo	Int Med Surg
Bridgeport Hospital	Bridgeport Conn	Anes Int Med Obst Path Rad Surg
St Vincent's Hospital	Bridgeport, Conn	Obst
Hartford Hospital	Hartford Conn	Anes Int Med Neuro Surg Ob-Gyn. Ortho Surg Path. Ped Rad Surg
Institute of Living	Hartford Conn	Psych
St Francis Hospital	Hartford Conn	Anes Int Med Neuro Surg Ob-Gyn Path Surg
Connecticut State Hospital	Middletown Conn	Psych
Middlesex Hospital	Middletown Conn	Path
New Britain General Hospital	New Britain Conn	Int Med Ob-Gyn Path Surg
Silver Hill Foundation	New Canaan Conn	Psych
Grace-New Haven Community Hospital		
Grace Unit	New Haven Conn	Int Med Ob-Gyn Rad. Surg
New Haven Unit (University Service)	New Haven Conn	Anes Int Med Neuro Surg Ob Gyn Ophth Otol. Ortho Surg Path. Ped Psych Rad Surg Thor Surg Urol
Hospital of St Raphael	New Haven Conn	Anes Int Med Ob-Gyn Ortho Surg Path. Ped. Rad. Surg. Urol.
Newington Home and Hospital for Crippled Children	Newington Conn	Ortho Surg
Veterans Admin Hospital	Newington Conn	Int Med Path Psych Rad Surg Urol
Lawrence and Memorial Associated Hospitals	New London Conn	Int Med Ob-Gyn Surg.
Fairfield State Hospital	Newtown Conn	Psych
Norwalk Hospital	Norwalk Conn	Int Med Obst Path Surg
Norwich State Hospital	Norwich Conn	Psych
Norwich State Tuberculosis Sanatorium	Norwich Conn	Pul Dis Thor Surg
Connecticut State Veterans Home and Hospital for Chronic Illness	Rocky Hill Conn	Phy Med.
Laurel Heights State Tuberculosis Sanatorium	Shelton Conn	Pul Dis
Stamford Hospital	Stamford Conn	Path
Charlotte Hungerford Hospital	Torrington Conn	Gen l Pract
Gaylord Farm Sanatorium	Wallingford Conn	Pul Dis
St Mary's Hospital	Waterbury Conn	Anes Int Med Path Surg
Waterbury Hospital	Waterbury Conn	Int Med Path. Ped Rad Surg Urol.
Delaware State Hospital	Farnhurst Del	Psych.
Alfred I. duPont Institute of Nemours Foundation	Wilmington Del	Ortho Surg
Delaware Hospital	Wilmington Del	Int Med Path Ped Rad Surg
Memorial Hospital	Wilmington Del	Anes Int. Med Path Surg
Wilmington General Hospital	Wilmington Del	Int Med
Army Institute of Pathology	Washington D C	Path
Central Dispensary and Emergency Hospital	Washington D C	Int Med Rad Surg
Children's Hospital	Washington D C	Path Ped
Columbia Hospital for Women and Lying In Asylum	Washington D C	Ob-Gyn
Doctors Hospital	Washington D C	Anes Int Med Ob Gyn Path. Rad Surg
Eastern Dispensary and Casualty Hospital	Washington D C	Gen l Pract
Episcopal Eye Ear and Throat Hospital	Washington D C	Ophth Otol
Freedmen's Hospital	Washington D C	Derm Syph Int Med Neur Ob Gyn Ortho Surg Ped Pul. Dis Rad Surg Urol
Gallinger Municipal Hospital	Washington D C	Anes Int Med Neur Ob-Gyn. Ophth Otol Ortho Surg Path. Ped., Psych Surg Urol.
Garfield Memorial Hospital	Washington D C	Anes Int Med Ob-Gyn, Path Rad Surg
Georgetown University Hospital	Washington D C	Anes Derm Syph Int Med Neur Ob-Gyn Path Ped Psych. Rad Surg
George Washington University Hospital	Washington D C	Anes, Card Dis Int. Med Neur Neuro Surg Ob-Gyn Path. Psych Rad Surg
Providence Hospital	Washington D C	Int Med Ob-Gyn Path. Ped Surg
St Elizabeth's Hospital	Washington D C	Psych Surg
Sibley Memorial Hospital	Washington D C	Ob Gyn Path Surg
Tuberculosis Sanatorium (Glendale Md)	Washington D C	Pul Dis
Veterans Admin. Hospital	Washington D C	Anes Int Med Path Rad Surg Urol.
Walter Reed Army Hospital	Washington D C	Anes Card Dis Derm Syph Int Med Neur Ob-Gyn, Ophth Otol., Ortho Surg, Path Ped Phys Med Psych Rad Surg Thor Surg Urol
Veterans Admin Hospital	Coral Gables Fla	Int Med Path Surg
Brewster Hospital	Jacksonville Fla	Ob Gyn
Duval Medical Center	Jacksonville Fla	Int Med Ob-Gyn Ped Psych Surg Urol
Hope Haven Hospital	Jacksonville Fla	Ortho Surg
Riverside Hospital	Jacksonville Fla	Anes Int Med Surg
St Luke's Hospital	Jacksonville Fla	Gen l Pract Int Med Obst Surg.
St. Vincent's Hospital	Jacksonville Fla	Neuro Surg Ob Gyn. Path Ped Surg Urol
Jackson Memorial Hospital	Miami Fla	Int Med Ob Gyn Ortho Surg. Path Ped Rad Surg Urol
St Francis Hospital	Miami Beach Fla	Surg
Orange Memorial Hospital	*Orlando Fla*	Int Med Ob-Gyn Surg Urol
Tampa Municipal Hospital	Tampa Fla	Int Med Surg
Crawford W Long Memorial Hospital	Atlanta Ga	Int. Med Ob-Gyn Path. Ped Rad Surg
Georgia Baptist Hospital	Atlanta Ga	Surg
Grady Memorial Hospital	Atlanta Ga	Int Med Ob Gyn Ophth. Otol Path Ped Rad Surg Urol.
Henrietta Egleston Hospital for Children	Atlanta Ga	Ped.
Piedmont Hospital	Atlanta Ga	*Int. Med Ob Gyn Rad Surg*
St. Joseph's Infirmary	Atlanta Ga	Int. Med Obst. Surg
University Hospital	Augusta Ga	Anes Int Med Ob-Gyn Ortho Surg Path Ped Psych. Rad. Surg Thor Surg Urol
Veterans Admin. Hospital	Augusta Ga	Int Med
Veterans Admin Hospital	Chamblee Ga	Int. Med Neuro Surg Ophth. Otol. Ortho Surg Path Rad., Surg. Thor Surg, Urol.
Scottish Rite Hospital for Crippled Children	Decatur Ga	Ortho Surg
Emory University Hospital	Emory University Ga	Int Med Neuro. Surg Ortho. Surg Path Phys Med Rad. Surg
Georgia *Warm Springs* Foundation	Warm Springs Ga	Phy Med.
St. Joseph's Hospital	Alton Ill	Gen l Pract

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
MacNeal Memorial Hospital	Berwyn Ill	Gen'l Pract
Alexian Brothers Hospital	Chicago Ill	Int Med Ortho Surg. Path. Urol
American Hospital	Chicago Ill	Anes Int Med Surg.
Augustana Hospital	Chicago Ill	Int Med. Neuro Surg Obst Path. Rad Surg
Chicago Eye Ear Nose and Throat Hospital	Chicago Ill	Ophth.
Chicago Intensive Treatment Center	Chicago Ill	Syph.
Chicago Maternity Center	Chicago Ill	Obst
Chicago Memorial Hospital	Chicago Ill	Neuro Surg Surg.
Chicago State Hospital	Chicago Ill	Psych.
Children's Memorial Hospital	Chicago Ill	Ortho Surg Path Ped., Surg.
City of Chicago Municipal Tuberculosis Sanatorium	Chicago Ill	Path Pul Dis Thor Surg
Cook County Hospital	Chicago Ill	Anes Con Dis. Derm Syph. Int Med Neur Neuro Surg Ob-Gyn Ophth Otol. Ortho Surg Path. Ped. Phys Med Psych. Rad Surg Urol
Englewood Hospital	Chicago Ill	Int Med Obst Path.
Frank Cuneo Memorial Hospital	Chicago Ill	Ob Gyn.
Franklin Boulevard Community Hospital	Chicago Ill	Rad
Grant Hospital	Chicago Ill	Anes. Int Med Ob-Gyn. Path. Surg
Henrotin Hospital	Chicago Ill	Int. Med Obst Surg.
Hospital of St Anthony de Padua	Chicago Ill	Int Med Obst Surg.
Illinois Central Hospital	Chicago Ill	Int Med Surg
Illinois Eye and Ear Infirmary	Chicago Ill	Ophth Otol
Illinois Masonic Hospital	Chicago Ill	Int Med Ob-Gyn Ortho Surg Path Rad Surg
Illinois Neuropsychiatric Institute	Chicago Ill	Neur Neuro Surg Psych.
Lewis Memorial Maternity Hospital	Chicago Ill	Ob-Gyn
Loretto Hospital	Chicago Ill	Int Med Obst Psych.
Lutheran Deaconess Home and Hospital	Chicago Ill	Int Med Obst Surg
Mercy Hospital	Chicago Ill	Int Med. Neuro Surg Ob-Gyn. Ophth Otol Path Ped Proct Psych Rad Surg Urol
Michael Reese Hospital	Chicago Ill	Anes. Card Dis Derm. Syph Gastro, Int. Med. Mal Dis Ob-Gyn Ophth Ortho Surg Path. Ped Phys Med Psych. Rad Surg Urol
Mount Sinai Hospital	Chicago Ill	Anes. Int Med. Ob-Gyn Path. Ped Rad Surg Urol
Municipal Contagious Disease Hospital	Chicago Ill	Con. Dis
Northwestern University Medical Center	Chicago Ill	Allergy Derm Syph. Phys Med
Norwegian-American Hospital	Chicago Ill	Int. Med Path Surg
Passavant Memorial Hospital	Chicago Ill	Int. Med Neuro Surg Ob-Gyn Ophth Orth Surg Path Rad. Surg
Presbyterian Hospital	Chicago Ill	Anes Int Med Neuro Surg Ob.-Gyn Ophth Otol. Path Ped Rad Surg Urol.
Provident Hospital	Chicago Ill	Int. Med. Ob.-Gyn Ophth Path Ped Rad Surg. Urol.
Ravenswood Hospital	Chicago Ill	Gen'l Pract Int Med. Ob Gyn Path Rad Surg
Research and Educational Hospitals	Chicago Ill	Anes Derm Syph Int Med Obst Ophth. Otol Ortho Surg Path Ped Phys Med Rad Surg
St Anne's Hospital	Chicago Ill	Int Med Obst Surg
St Bernard's Hospital	Chicago Ill	Rad
St Elizabeth Hospital	Chicago Ill	Int. Med Ob.-Gyn Ortho Surg Surg
St. Joseph Hospital	Chicago Ill	Int Med. Ob-Gyn Ophth Ped Surg
St Luke's Hospital	Chicago Ill	Anes Int Med Neur Neuro Surg Ob-Gyn Ophth. Otol Ortho Surg Path Ped Psych Rad. Surg Urol
St. Mary of Nazareth Hospital	Chicago Ill	Int Med Path Surg
Shriners Hospital for Crippled Children	Chicago Ill	Ortho Surg
Swedish Covenant Hospital	Chicago Ill	Obst
U S. Public Health Service Hospital	Chicago Ill	Int Med.
University of Chicago Clinics	Chicago Ill	Anes Derm Syph. Int Med Neur Neuro Surg Ob-Gyn Ophth. Otol Ortho Surg Path Ped Psych Pul. Dis. Rad. Surg Urol.
Veterans Rehabilitation Center	Chicago Ill	Psych.
Wesley Memorial Hospital	Chicago Ill	Anes. Int Med Neuro Surg Ob-Gyn Ophth. Ortho Surg Path. Psych Rad Surg Urol
Women and Children's Hospital	Chicago Ill	Int. Med Obst Surg
Woodlawn Hospital	Chicago Ill	Int Med. Ophth. Surg
Dixon State Hospital	Dixon Ill	Psych.
Veterans Admin Hospital	Downey Ill	Psych.
Elgin State Hospital	Elgin Ill	Psych.
Evanston Hospital	Evanston Ill	Anes. Int. Med Ob-Gyn Ortho Surg Path Rad Surg Urol
St Francis Hospital	Evanston, Ill	Int. Med. Ob-Gyn Ortho Surg Path. Rad Surg Urol
Little Company of Mary Hospital	Evergreen Park, Ill	Int. Med Ob.-Gyn Ped, Rad Surg.
U S Naval Hospital	Great Lakes Ill	Int. Med Ob.-Gyn. Psych Rad. Surg
Veterans Admin Hospital	Hines Ill	Anes Card Dis Derm Syph. Int Med Mal Dis Neur Neuro Surg Ophth. Otol Ortho Surg Path Phys Med Plas Surg Psych Pul Dis Rad Surg Thor Surg Urol.
St Joseph's Hospital	Joliet Ill	Anes
Kankakee State Hospital	Kankakee Ill	Psych
Lincoln State School and Colony	Lincoln Ill	Psych.
Manteno State Hospital	Manteno Ill	Psych
West Suburban Hospital	Oak Park Ill	Int Med Ob Gyn Ortho Surg Ped. Surg
Methodist Hospital of Central Illinois	Peoria Ill	Gen'l Pract Obst Path Surg
Peoria Municipal Tuberculosis Sanitarium	Peoria Ill	Pul. Dis.
Peoria State Hospital	Peoria Ill	Psych
St Francis Hospital	Peoria, Ill	Int Med. Ob Gyn Ortho Surg Path Ped Rad Surg. Urol
Rockford Municipal Tuberculosis Sanatarium	Rockford Ill	Pul Dis
St Anthony's Hospital	Rockford Ill	Path.
Lake County Tuberculosis Sanatorium	Waukegan Ill	Pul Dis
North Shore Health Resort	Winnetka Ill	Psych
St Francis Hospital	Beech Grove, Ind	Gen'l Pract
Clinic Hospital (Caylor Nickel Clinic)	Bluffton Ind	Int Med Rad Surg
Boehne Tuberculosis Hospital	Evansville Ind	Pul Dis
Protestant Deaconess Hospital	Evansville Ind	Rad
St. Joseph's Hospital	Fort Wayne Ind	Path Rad
St Margaret's Hospital	Hammond Ind	Gen'l Pract Rad
Central State Hospital	Indianapolis Ind	Psych.
Indianapolis General Hospital	Indianapolis Ind	Anes Derm Syph Int Ped Neur Ob-Gyn Ophth Otol Ortho Surg Path. Ped Psych. Pul. Dis Surg Urol
Indiana University Medical Center	Indianapolis Ind	Anes. Card Dis Int Med Neur Neuro Surg Obst Ophth. Otol. Ortho Surg Path. Ped Plas Surg Psych Rad Surg Urol.
Methodist Hospital	Indianapolis Ind	Anes Int Med Neur Obst Ortho Surg Path Rad Surg Urol
Norways Sanatorium	Indianapolis Ind	Psych.
St Vincent's Hospital	Indianapolis Ind	Int Med. Ob Gyn Ortho Surg Ped Surg
Sunnyside Sanatorium	Indianapolis Ind	Pul Dis
Veterans Admin Hospital	Indianapolis Ind	Int Med Ortho Surg Path Rad Surg
St Elizabeth Hospital	Lafayette Ind	Int Med Ob-Gyn Path Rad Surg
Logansport State Hospital	Logansport Ind	Psych
Ball Memorial Hospital	Muncie Ind	Int Med Path Rad Surg
Healthwin Hospital	South Bend Ind	Pul. Dis
Memorial Hospital	South Bend Ind	Anes Path
St Luke's Methodist Hospital	Cedar Rapids Iowa	Gen'l Pract
Mental Health Institute	Cherokee Iowa	Psych
Broadlawns Polk County Hospital	Des Moines Iowa	Gen'l Pract
Iowa Methodist Hospital	Des Moines Iowa	Int Med Ortho Surg Path Ped Rad Surg
Mercy Hospital	Des Moines Iowa	Path

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Veterans Admin Hospital	Des Moines Iowa	Anes Int Med Ortho Surg Path. Rad Surg
Iowa State Psychopathic Hospital	Iowa City Iowa	Psych
Mercy Hospital	Iowa City Iowa	Ortho Surg
University Hospitals	Iowa City Iowa	Anes Derm Syph Gen l Pract Int Med. Neur Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path Ped. Rad Surg Urol
State Sanatorium	Oakdale Iowa	Pul Dis
St Margaret s Hospital	Kansas City Kans	Surg
University of Kansas Hospitals	Kansas City Kans	Anes Derm Syph Int Med Neur Neuro Surg Ob-Gyn. Ophth. Otol. Ortho Surg Path Ped Phys. Med Plast Surg Psych Rad Surg Urol
Menninger Sanitarium	Topeka Kans	Psych
Veterans Admin Hospital	Topeka Kans	Int Med Neur Psych
Veterans Admin Hospital	Wadsworth Kans	Anes Int Med. Neuro Surg Ophth Otol Ortho Surg Path Phys Med. Rad Surg Urol
St Francis Hospital	Wichita Kans	Gen l Pract Int Med Ob Gyn. Path Surg
Veterans Admin Hospital	Wichita Kans	Int Med. Surg
Wesley Hospital	Wichita Kans	Gen l Pract Int Med. Ob-Gyn Rad Surg
Good Samaritan Hospital	Lexington Ky	Int Med Surg
St Joseph s Hospital	Lexington Ky	Anes Int Med Ob Gyn Surg Urol
U S Public Health Service Hospital	Lexington Ky	Psych.
Veterans Admin Hospital	Lexington Ky	Psych
Kosair Crippled Children s Hospital	Louisville Ky	Ortho Surg
Louisville General Hospital	Louisville Ky	Anes., Int Med Neur Neuro Surg Ob-Gyn Ophth Otol. Ortho Surg. Path Ped Psych. Rad Surg Urol.
Norton Memorial Infirmary	Louisville Ky	Psych. Rad Surg
St Joseph Infirmary	Louisville Ky	Int Med Ob-Gyn Ped Rad Surg.
Veterans Admin Hospital	Louisville Ky	Int Med Neur Neuro Surg Ophth Otol Ortho Surg. Path Psych Rad. Surg Urol
Waverly Hills Tuberculosis Sanatorium	Waverly Hills Ky	Pul Dis
Baptist Hospital	Alexandria La	Rad
Baton Rouge General Hospital	Baton Rouge La	Gen l Pract
Charity Hospital of Louisiana	New Orleans La	Anes, Derm Syph. Int Med. Neur Ob-Gyn. Ophth Otol. Ortho Surg Path Ped Plast Surg Psych. Pul Dis Rad Surg Urol.
DePaul Hospital	New Orleans La	Psych
Eye Ear Nose and Throat Hospital	New Orleans La	Ophth Otol
Hotel Dieu Sisters Hospital	New Orleans La	Int Med Ob-Gyn Path. Ped. Surg
Ochsner Foundation Hospital	New Orleans La	Anes Int Med, Neuro Surg Ob-Gyn. Ortho Surg Rad Surg. Urol
Southern Baptist Hospital	New Orleans La	Int Med. Ob-Gyn Path Ped Rad Surg
Touro Infirmary	New Orleans La	Anes, Int Med Ob-Gyn Ophth. Otol. Ortho Surg Path. Ped Rad. Surg Urol
U S Public Health Service Hospital	New Orleans La	Int Med Ophth Path Rad Surg
Veterans Admin Hospital	New Orleans La	Derm. Syph. Int Med Ophth Ortho Surg Path. Psych. Rad Surg Urol
Shreveport Charity Hospital	Shreveport La	Int Med Ob-Gyn Ortho Surg Path. Ped Rad Surg Urol.
Shriners Hospital for Crippled Children	Shreveport La	Ortho Surg
Eastern Maine General Hospital	Bangor Me	Anes Path Rad
Western Maine Sanatorium	Greenwood Mountain Me	Pul Dis
Central Maine General Hospital	Lewiston Me	Anes Ped
Maine General Hospital	Portland Me	Anes Int Med. Neuro Surg Path. Rad Surg
Baltimore City Hospitals	Baltimore Md	Int Med Neur Obst Ortho Surg Path Ped Pul. Dis Rad Surg
Baltimore Eye Ear and Throat Charity Hospital	Baltimore Md	Ophth Otol
Bon Secours Hospital	Baltimore Md	Ob-Gyn Surg
Children s Hospital School	Baltimore Md	Ortho Surg
Church Home and Hospital	Baltimore Md	Int Med Surg
Franklin Square Hospital	Baltimore Md	Int Med Ob Gyn Surg
Hospital for Women	Baltimore Md	Int Med Ob Gyn.
James Lawrence Kernan Hospital for Crippled Children	Baltimore Md	Ortho Surg
Johns Hopkins Hospital	Baltimore Md	Int Med Neur Neuro. Surg Ob-Gyn Ophth Otol Ortho Surg Path. Ped, Plast Surg Psych Rad Surg Syph Urol.
Lutheran Hospital	Baltimore Md	Int Med Ob-Gyn Surg
Maryland General Hospital	Baltimore Md	Int Med Ob Gyn Surg
Mercy Hospital	Baltimore Md	Int Med Ob-Gyn. Ped Surg
Provident Hospital and Free Dispensary	Baltimore Md	Int Med Obst Surg
St Agnes Hospital	Baltimore Md	Int Med Ob-Gyn Surg
St. Joseph Hospital	Baltimore Md	Int Med Ob-Gyn Surg
Seton Institute	Baltimore Md	Psych
Sinai Hospital	Baltimore Md	Int Med. Ob-Gyn Path Ped Rad. Surg Urol.
South Baltimore General Hospital	Baltimore Md	Int Med Obst Otol Surg
Union Memorial Hospital	Baltimore Md	Int Med Obst Path Ped Rad Surg
U S Public Health Service Hospital	Baltimore Md	Int Med Ophth Path. Rad Surg Urol.
University Hospital	Baltimore Md	Anes Derm Syph. Int Med. Neuro Surg Ob-Gyn Ophth. Ortho Surg Otol Path. Ped. Rad. Surg
National Institute of Health	Bethesda Md	Path
Suburban Hospital	Bethesda Md	Surg
U S Naval Hospital	Bethesda Md	Anes Card Dis Int Med Neur, Ob-Gyn Ophth Otol Ortho Surg Path. Ped Psych Rad Surg Urol.
Spring Grove State Hospital	Catonsville Md	Psych
Memorial Hospital	Cumberland Md	Path
Veterans Admin Hospital	Fort Howard Md	Derm Syph Int Med Ophth Ortho Surg Path Rad Surg Urol
Veterans Admin Hospital	Perry Point Md	Int Med Psych Surg
Chestnut Lodge Sanitarium	Rockville Md	Psych
Springfield State Hospital	Sykesville Md	Psych
Sheppard & Enoch Pratt Hospital	Towson Md	Psych.
Veterans Admin Hospital	Bedford Mass	Psych
Beverly Hospital	Beverly Mass	Int Med Path Surg
Beth Israel Hospital	Boston Mass	Int Med Obst Otol Path, Psych Rad Surg Urol.
Boston City Hospital	Boston Mass	Anes, Derm Syph. Int Med Neur Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path Ped Rad. Surg Urol
Boston Floating Hospital	Boston Mass	Ped
Boston Lying In Hospital	Boston Mass	Obst Path
Boston Psychopathic Hospital	Boston Mass	Psych
Boston Sanatorium	Boston Mass	Pul Dis Thor Surg
Boston State Hospital	Boston Mass	Psych
Carney Hospital	Boston Mass	Int Med Ob-Gyn Path Surg
Children s Hospital	Boston Mass	Ortho Surg Path Ped Rad Surg
Faulkner Hospital	Boston Mass	Int Med Rad
Lahey Clinic	Boston Mass	Anes Int Med Neuro Surg Otol. Ortho Surg Rad Surg Urol
Massachusetts Eye and Ear Infirmary	Boston Mass	Ophth Otol.
Massachusetts General Hospital	Boston Mass	Anes Derm Syph Int Med Mal. Dis Neur Neuro Surg Ortho Surg Path Ped Phys Med Psych. Rad Surg Urol
Massachusetts Memorial Hospitals	Boston Mass	Anes Cont Dis Derm Syph Int Med Ob-Gyn Ophth Otol Path Psych Rad. Surg Urol.
New England Center Hospital	Boston Mass	Anes Int Med. Neur Neuro Surg Psych Rad Surg Urol
New England Deaconess Hospital	Boston Mass	Int Med. Path Rad
New England Hospital	Boston Mass	Anes Surg
Peter Bent Bringham Hospital	Boston Mass	Anes Int Med Ortho Surg Path Psych Rad Surg Urol
St. Elizabeth Hospital	Boston Mass	Anes Obst Path. Rad Surg
U S Public Health Service Hospital	Boston Mass	Int Med Surg
Veterans Admin. Hospital	Boston Mass	Int Med Otol Ortho Surg Path. Psych Rad Surg Urol
Booth Memorial Hospital and Home	Brookline Mass	Obst

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Free Hospital for Women	Brookline Mass	Gyn.
Cambridge City Hospital	Cambridge Mass	Anes. Int Med Ob-Gyn Path Rad Surg
Mount Auburn Hospital	Cambridge Mass	Anes., Int Med Path Rad. Surg Urol
Massachusetts Hospital School	Canton Mass	Ortho Surg.
Lawrence F Quigley Memorial Hospital	Chelsea Mass	Surg
U S. Naval Hospital	Chelsea Mass	Anes Gen l Pract Int Med Ob-Gyn Ortho Surg Ped Psych Rad Surg
Fall River General Hospital Tuberculosis Division	Fall River Mass	Pul Dis
Truesdale Hospital	Fall River Mass	Int Med Surg
Burbank Hospital	Fitchburg Mass	Path.
Foxboro State Hospital	Foxboro Mass	Psych.
Framingham Union Hospital	Framingham Mass	Path
Veterans Admin Hospital	Framingham Mass	Anes Int. Med Neur Neuro Surg Otol Ortho Surg Path Phys Med Psych Rad Surg Urol
Danvers State Hospital	Hathorne Mass	Psych
Holyoke Hospital	Holyoke Mass	Path.
Lawrence General Hospital	Lawrence Mass	Path.
Lynn Hospital	Lynn Mass	Int Med Path. Rad Surg
Malden Hospital	Malden Mass	Int Med Path Surg
Medfield State Hospital	Medfield Mass	Psych.
St Luke's Hospital	New Bedford Mass	Path.
Newton-Wellesley Hospital	Newton Lower Falls Mass	Anes Int Med Path. Rad. Surg
Cooley Dickenson Hospital	Northampton Mass	Gen l Pract
Northampton State Hospital	Northampton Mass	Psych
Quincy City Hospital	Quincy Mass	Ob-Gyn Path. Surg
Veterans Admin. Hospital	Rutland Heights Mass	Pul Dis Thor Surg
Salem Hospital	Salem Mass	Int Med Path. Rad Surg
Shriners Hospital for Crippled Children	Springfield Mass	Ortho Surg.
Springfield Hospital	Springfield Mass	Anes Int Med. Surg
Austen Riggs Foundation	Stockbridge Mass	Psych.
Taunton State Hospital	Taunton Mass	Psych
Pondville Hospital	Walpole Mass	Mal Dis Path Surg
Metropolitan State Hospital	Waltham Mass	Psych
Middlesex County Sanatorium	Waltham Mass	Pul Dis
McLean Hospital	Waverly Mass	Psych.
Westfield State Sanatorium	Westfield Mass	Mal Dis Pul. Dis
Belmont Hospital	Worcester Mass	Cont Dis Pul Dis
Memorial Hospital	Worcester Mass	Anes Int Med Path Rad Surg
St Vincent's Hospital	Worcester Mass	Anes Int Med Surg
Worcester City Hospital	Worcester Mass	Int Med Ortho Surg Path Ped Psych. Surg Urol
Worcester State Hospital	Worcester Mass	Path Psych
St Joseph Mercy Hospital	Ann Arbor Mich	Int Med Ob-Gyn., Rad Surg.
University Hospital	Ann Arbor Mich	Allergy Derm Syph. Int Med Neur Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path Ped Phys Med Psych Rad Surg Thor Surg Urol
American Legion Hospital	Battle Creek Mich	Pul Dis
Leila Y Post Montgomery Hospital	Battle Creek Mich	Path Rad Surg
St Joseph's Retreat	Dearborn Mich	Psych.
Veterans Admin. Hospital	Dearborn Mich	Anes Int Med Ophth. Ortho Surg Path Psych Rad Surg
Alexander Blain Hospital	Detroit Mich	Int Med. Surg
Children's Hospital	Detroit Mich	Ortho Surg Ped Rad
City of Detroit Receiving Hospital	Detroit Mich	Anes Derm. Syph. Int Med Gyn Ophth Otol Ortho Surg Path Psych Rad Surg Urol
Detroit Memorial Hospital	Detroit Mich	Int Med. Path Surg
Evangelical Deaconess Hospital	Detroit Mich	Int Med Ob-Gyn Surg
Florence Crittenton Hospital	Detroit Mich	Int Med Ob-Gyn
Grace Hospital	Detroit Mich	Int Med Neuro Surg Ob.-Gyn Path Rad Surg Urol
Harper Hospital	Detroit Mich	Int. Med Ob-Gyn. Ophth Otol Ortho Surg Path. Ped Rad Surg, Urol
Henry Ford Hospital	Detroit Mich	Card Dis. Int Med Neur Neuro Surg. Ob-Gyn Ophth Otol Ortho Surg Path Ped Psych., Rad. Surg Urol
Herman Kiefer Hospital	Detroit Mich	Cont Dis Obst Path Pul. Dis Rad Thor Surg
Jennings Memorial Hospital	Detroit Mich	Int Med. Surg
Mount Carmel Mercy Hospital	Detroit Mich	Int Med. Ob-Gyn Path Rad Surg.
Providence Hospital	Detroit Mich	Anes Int Med. Ob-Gyn Path Ped Rad Surg
St. Joseph Mercy Hospital	Detroit Mich	Ob Gyn Surg.
U S Public Health Service Hospital	Detroit Mich	Int Med Surg
Woman's Hospital	Detroit Mich	Int Med. Ob-Gyn Path. Surg.
Wayne County General Hospital and Infirmary	Eloise Mich	Int Med. Ophth. Path Psych Rad Surg Urol
Hurley Hospital	Flint Mich	Int. Med Ob-Gyn Path Rad Surg
St Joseph Hospital	Flint Mich	Gen l Pract.
Veterans Admin Hospital	Fort Custer Mich	Psych
Blodgett Memorial Hospital	Grand Rapids Mich	Int Med. Ob-Gyn Ortho Surg Path. Rad Surg.
Butterworth Hospital	Grand Rapids, Mich	Anes Int. Med Ob-Gyn Path Rad Surg
St Mary's Hospital	Grand Rapids Mich	Int Med. Ob.-Gyn Ped Surg
Highland Park General Hospital.	Highland Park Mich	Int. Med Surg
Michigan State Sanatorium	Howell Mich	Pul Dis
Borgess Hospital	Kalamazoo Mich	Gen l Pract Ortho Surg
Bronson Methodist Hospital	Kalamazoo Mich	Int Med. Surg
Kalamazoo State Hospital	Kalamazoo Mich	Psych
Edward W Sparrow Hospital	Lansing Mich	Int Med Path
Ingham Sanatorium	Lansing Mich	Pul Dis
St Lawrence Hospital	Lansing Mich	Int Med.
Morgan Heights Sanatorium	Marquette Mich	Pul. Dis.
Hackley Hospital	Muskegon Mich	Rad
Mercy Hospital	Muskegon Mich	Gen l Pract
William H Maybury Sanatorium	Northville, Mich	Pul. Dis.
Oakland County Tuberculosis Sanatorium	Pontiac Mich	Pul Dis
Pontiac General Hospital	Pontiac Mich	Int Med Ob-Gyn Surg.
Pontiac State Hospital	Pontiac Mich	Psych
St Joseph Mercy Hospital	Pontiac Mich	Gen l Pract Obst
Saginaw General Hospital	Saginaw Mich	Int Med Ob.-Gyn Occup Med Path Ped Surg
St Luke's Hospital	Saginaw Mich	Gen l Pract
James Decker Munson Hospital	Traverse City Mich	Gen l Pract
Traverse City State Hospital	Traverse City Mich	Psych.
Wyandotte General Hospital	Wyandotte Mich	Gen l Pract
Ypsilanti State Hospital	Ypsilanti Mich	Psych
St Mary's Hospital	Duluth Minn	Path.
Hastings State Hospital	Hastings Minn	Psych
Asbury Hospital	Minneapolis Minn	Int Med Surg
Fairview Hospital	Minneapolis Minn	Gen l Pract
Lutheran Deaconess Home and Hospital	Minneapolis Minn	Surg
Maternity Hospital	Minneapolis Minn	Obst
Minneapolis General Hospital	Minneapolis Minn	Derm Syph Int Med Ob-Gyn Ophth Path Ped Psych Surg Urol
Northwestern Hospital	Minneapolis Minn	Int Med Ob.-Gyn Path. Ped Rad. Surg
St Barnabas Hospital	Minneapolis Minn	Int Med Ob-Gyn Path Ped Surg
St. Mary's Hospital	Minneapolis Minn	Ob.-Gyn Urol.
Shriners Hospital for Crippled Children	Minneapolis Minn	Ortho. Surg
Swedish Hospital	Minneapolis Minn	Path Rad Surg.
University Hospital	Minneapolis Minn	Anes Derm Syph Int Med. Mal. Dis Neur Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path. Ped Phys. Med Psych Rad. Surg Urol

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Veterans Admin Hospital	Minneapolis, Minn	Anes., Derm Syph. Int Med Neur Neuro Surg Ophth. Otol. Ortho. Surg., Path Pul. Dis Rad Surg Thor Surg Urol.
Nopeming Sanatorium	Nopeming Minn	Pul Dis
Glen Lake Sanatorium	Oak Terrace Minn	Pul. Dis.
Mayo Clinic	Rochester Minn	Anes Derm Syph Int. Med Neur Neuro. Surg Ob.-Gyn. Ophth., Otol., Ortho Surg Path. Ped Phys Med. Plas Surg Proct, Psych., Rad., Surg., Urol
Rochester State Hospital	Rochester Minn	Psych
Ancker Hospital	St. Paul Minn	Derm Syph Int. Med Ob Gyn Ophth, Path, Surg Urol.
Charles T Miller Hospital	St Paul Minn	Int. Med Ob Gyn Ophth Path Rad Surg Urol.
Gillette State Hospital for Crippled Children	St Paul Minn	Ortho Surg
Midway Hospital	St. Paul Minn	Gen'l Pract.
St. Joseph's Hospital	St Paul Minn	Int Med Rad
Veterans Admin Hospital	Gulfport Miss	Psych
Mississippi Baptist Hospital	Jackson Miss	Ortho Surg
Meridian Public Health Treatment Center	Meridian Miss	Syph
Mississippi State Tuberculosis Sanatorium	Sanatorium, Miss	Pul Dis
Lutheran Hospital	Vicksburg Miss	Surg
Mercy Hospital-Street Memorial	Vicksburg Miss	Surg
St. Louis County Hospital	Clayton Mo	Int Med Ob Gyn Ophth. Path. Surg.
Ellis Fischel Cancer Hospital	Columbia Mo	Mal Dis Surg
University Hospital	Columbia Mo	Ortho Surg
Veterans Admin Hospital	Excelsior Springs Mo	Pul Dis
State Hospital No 1	Fulton Mo	Psych.
Veterans Admin Hospital	Jefferson Barracks Mo	Anes Int Med Ophth. Otol Ortho Surg Path., Phys. Med., Psych. Rad., Surg Thor Surg. Urol.
Children's Mercy Hospital	Kansas City Mo	Ortho Surg Ped
Kansas City Gen'l Hospital No 1	Kansas City Mo	Int. Med Ob-Gyn Ophth. Otol Ortho Surg Path Ped., Psych. Rad., Surg Urol.
Kansas City General Hospital No 2	Kansas City Mo	Ob-Gyn Rad
Kansas City Municipal Tuberculosis Hospital	Kansas City Mo	Pul Dis.
Menorah Hospital Medical Center	Kansas City Mo	Int Med. Path Rad Surg
Research Hospital	Kansas City Mo	Anes Int. Med Path Rad Surg Urol.
St. Joseph Hospital	Kansas City Mo	Int Med Ob Gyn Path. Rad Surg
St. Luke's Hospital	Kansas City Mo	Int Med Ob Gyn. Ortho. Surg. Path Rad Surg
St Mary's Hospital	Kansas City Mo	Int Med. Surg
Robert Koch Hospital	Koch Mo	Pul. Dis
Missouri Methodist Hospital	St Joseph Mo	Gen'l Pract Surg
State Hospital No 2	St Joseph Mo	Psych
Alexian Brothers Hospital	St Louis Mo	Gen'l Pract
Barnard Free Skin and Cancer Hospital	St Louis Mo	Derm Syph Mal Dis Rad
Barnes Hospital	St Louis Mo	Derm Syph Int. Med. Neur Neuro Surg Ophth. Otol Ortho Surg. Path. Phys. Med Plas Surg Psych. Rad Surg Thor Surg., Urol.
De Paul Hospital	St Louis Mo	Int Med Ob-Gyn Rad Surg
Homer G Phillips Hospital	St Louis Mo	Int Med Neur Ob-Gyn. Ophth. Otol Path. Ped Psych. Rad Surg Urol
Jewish Hospital	St Louis Mo	Int Med Ob Gyn Path Ped Rad Surg
Missouri Baptist Hospital	St Louis Mo	Int. Med Path. Surg Urol
Missouri Pacific Hospital	St Louis Mo	Int Med, Surg Urol.
St. Anthony's Hospital	St Louis Mo	Gen'l Pract. Int. Med Surg
St John's Hospital	St Louis Mo	Anes Int Med Obst Surg
St Louis Children's Hospital	St Louis Mo	Ped, Surg
St Louis City Hospital	St Louis Mo	Int Med Neur Ob-Gyn Ophth. Otol Ortho Surg Path., Ped Psych. Rad Surg Urol
St Louis Maternity Hospital	St. Louis Mo	Ob-Gyn
St. Louis State Hospital	St Louis Mo	Psych
St. Luke's Hospital	St Louis Mo	Int Med Rad Surg
St Mary's Group of Hospitals	St. Louis Mo	Anes Derm Syph Int Med Ob-Gyn Ophth. Otol. Ortho. Surg Path. Ped Pul Dis. Rad Surg Thor Surg Urol
Shriners Hospital for Crippled Children	St Louis Mo	Ortho Surg
Murray Hospital and Clinic	Butte Mont	Gen'l Pract
Montana Deaconess Hospital	Great Falls, Mont	Int. Med Path
Hastings State Hospital	Ingleside, Nebr	Psych
Lincoln General Hospital	Lincoln Nebr	Ob Gyn Path
Nebraska Orthopedic Hospital	Lincoln Nebr	Ortho Surg
St. Elizabeth's Hospital	Lincoln Nebr	Obst
Veterans Admin Hospital	Lincoln Nebr	Anes Int Med Ortho Surg. Surg Urol.
Norfolk State Hospital	Norfolk Nebr	Psych
Bishop Clarkson Memorial Hospital	Omaha Nebr	Surg
Creighton Memorial St. Joseph Hospital	Omaha, Nebr	Int Med Ob-Gyn Path Ped Rad Surg
Lutheran Hospital	Omaha Nebr	Psych
Nebraska Methodist Hospital	Omaha Nebr	Path Rad
University of Nebraska Hospital	Omaha Nebr	Anes. Int. Med, Neuro. Surg, Ob-Gyn Ophth Ortho. Surg Path. Ped., Psych Rad Surg
New Hampshire State Hospital	Concord N H	Psych
Mary Hitchcock Memorial Hospital	Hanover N H	Anes Derm Syph. Int. Med Path Ped Rad Surg
Elliott Hospital	Manchester N H	Path
Atlantic City Hospital	Atlantic City, N J	Int. Med Path Rad Surg Urol
Bayonne Hospital and Dispensary	Bayonne N.J	Urol
Essex County Hospital for Contagious Diseases	Belleville N.J	Cont Dis.
Camden Municipal Hospital	Camden N.J	Cont Dis.
Cooper Hospital	Camden N.J	Int. Med Ob-Gyn Path. Ped Rad Surg Urol.
West Jersey Hospital	Camden N.J	Anes Path Surg
Essex County Overbrook Hospital	Cedar Grove N J	Psych
Englewood Hospital Association	Englewood N.J	Int Med
New Jersey Sanatorium for Tuberculosis Diseases	Glen Gardner N.J	Pul Dis.
Hackensack Hospital	Hackensack N.J	Int Med Surg
Berthold S Pollock Hospital for Chest Diseases	Jersey City N.J	Pul. Dis Thor Surg
Jersey City Hospital	Jersey City N.J	Int. Med Mal. Dis., Gyn Ophth. Otol Ortho Surg Path Ped., Rad., Surg Urol.
Margaret Hague Maternity Hospital	Jersey City N J	Obst.
Monmouth Memorial Hospital	Long Branch N J	Int. Med. Obst, Ortho Surg Path. Surg
Veterans Admin Hospital	Lyons, N.J	Psych
Mountainside Hospital	Montclair N.J	Int Med Path. Surg
Burlington County Hospital	Mount Holly N.J	Int Med Path. Surg
Fitkin Memorial Hospital	Neptune N.J	Int. Med. Surg
Babies Hospital-Coit Memorial	Newark N.J	Ped
Hospital and Home for Crippled Children	Newark N.J	Ortho Surg
Hospital of St Barnabas and for Women and Children	Newark N.J	Path, Plas Surg Rad., Surg.
Newark Beth Israel Hospital	Newark N.J	Int Med Gyn Path Rad Surg
Newark City Hospital	Newark N.J	Int Med Otol Path., Surg Urol.
Newark Eye and Ear Infirmary	Newark N J	Ophth Otol.
Presbyterian Hospital	Newark N.J	Path Surg
St Michael's Hospital	Newark N.J	Int Med Path Ped
St Peter's General Hospital	New Brunswick N.J	Int Med
New Jersey Orthopedic Hospital and Dispensary	Orange N J	Ortho Surg
Orange Memorial Hospital	Orange N.J	Int. Med Ortho Surg Path. Rad Urol.

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Passaic General Hospital	Passaic N.J	Path
Patterson General Hospital	Patterson N.J	Int. Med Obst. Path Surg
St Joseph Hospital	Patterson N.J	Anes.
Muhlenberg Hospital	Plainfield N.J	Path Surg
Bergen County Hospital	Ridgewood N.J	Pul. Dis.
Mercer Hospital	Trenton N.J	Path Rad Surg
New Jersey State Hospital	Trenton N.J	Psych.
Orthopedic Hospital and Dispensary	Trenton N.J	Ortho Surg
St. Francis Hospital	Trenton N.J	Int. Med., Surg
Essex Mountain Sanatorium	Verona N.J	Pul. Dis.
Veterans Admin Hospital	Albuquerque N M	Int Med Pul. Dis. Surg
Carrie Tingley Hospital for Crippled Children	Hot Springs, N.M	Ortho Surg
Albany Hospital	Albany N Y	Anes Gen'l Pract. Int. Med Neur Neuro Surg Ob-Gyn Otol. Ortho Surg Path Ped Plas Surg., Psych Pul. Dis Rad Surg Thor Surg Urol.
Anthony N Brady Maternity Hospital	Albany N Y	Obst
Bender Hygienic Laboratory	Albany N Y	Path.
St. Peter's Hospital	Albany, N Y	Ped
Veterans Admin. Hospital	Bath N Y	Int Med.
Montefiore Hospital	Bedford Hills N Y	Pul Dis
Binghamton City Hospital	Binghamton N Y	Int Med. Ortho Surg Path. Surg
Binghamton State Hospital	Binghamton N Y	Psych.
Beth El Hospital	Brooklyn N Y	Anes Int. Med. Ob Gyn. Path. Ped. Surg
Brooklyn Cancer Institute	Brooklyn, N Y	Rad Surg.
Brooklyn Eye and Ear Hospital	Brooklyn, N Y	Ophth Otol.
Brooklyn Hospital	Brooklyn N Y	Int Med Ob.-Gyn Path. Ped Rad Surg
Brooklyn State Hospital	Brooklyn N Y	Psych
Brooklyn Womens Hospital	Brooklyn N Y	Ob-Gyn.
Coney Island Hospital	Brooklyn N Y	Int. Med Path Ped Surg
Cumberland Hospital	Brooklyn N Y	Anes. Int. Med, Ob.-Gyn Path Ped Surg
Greenpoint Hospital	Brooklyn N Y	Int Med Ob-Gyn Path. Ped Surg
House of St Giles the Cripple	Brooklyn N Y	Ortho. Surg.
Jewish Hospital	Brooklyn, N Y	Allergy Anes Int. Med Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path Ped. Rad. Surg. Urol
Jewish Sanitarium and Hospital for Chronic Diseases	Brooklyn N Y	Int Med Neur
Kings County Hospital	Brooklyn N Y	Derm. Syph Int Med Neur Neuro Surg, Ob-Gyn Ophth Otol Ortho Surg Path Ped Plas. Surg Psych. Pul Dis Rad Surg Thor Surg. Urol.
Kingston Avenue Hospital	Brooklyn, N Y	Cont Dis Pul. Dis.
Long Island College Hospital	Brooklyn N Y	Int Med. Ob-Gyn Ophth, Otol. Ortho Surg Path. Ped Rad Surg Urol
Maimonides Hospital	Brooklyn, N Y	Anes Int Med Ob Gyn Path Ped Rad., Surg
Methodist Hospital	Brooklyn N Y	Anes Int Med., Ob-Gyn. Ortho Surg Path Ped Rad Surg Urol
Norwegian Lutheran Deaconesses Home and Hospital	Brooklyn N Y	Int. Med Obst. Path Ped Surg
St. Catherine's Hospital	Brooklyn N Y	Anes Int Med. Ob-Gyn Ped. Surg.
St Charles Hospital Orthopedic Clinic	Brooklyn N Y	Ortho Surg
St. John's Episcopal Hospital	Brooklyn N Y	Int. Med. Ob-Gyn., Path. Surg
St. Mary's Hospital	Brooklyn N Y	Int. Med Ob-Gyn Ped Surg
Unity Hospital	Brooklyn N Y	Anes Ob Gyn.
Veterans Admin Hospital	Brooklyn N Y	Anes Int Med Neur Ophth. Ortho Surg Path. Rad Surg Urol.
Wyckoff Heights Hospital	Brooklyn N Y	Int. Med. Ob-Gyn Surg
Buffalo General Hospital	Buffalo N Y	Anes Derm Syph Int. Med Neur Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path Rad Surg Urol.
Buffalo State Hospital	Buffalo N Y	Psych.
Children's Hospital	Buffalo N Y	Obst. Ortho Surg Ped, Surg
Deaconess Hospital	Buffalo N Y	Int Med Ob-Gyn Path Rad. Surg.
Edward J Meyer Memorial Hospital	Buffalo N Y	Anes, Derm Syph Int Med Ob-Gyn Ophth Otol Ortho Surg, Path. Ped Psych Pul Dis. Rad. Surg Thor Surg Urol.
Emergency Hospital of the Sisters of Charity	Buffalo N Y	Int Med
Millard Fillmore Hospital	Buffalo N Y	Anes., Gen'l Pract. Int. Med Neuro Surg Ob-Gyn Ophth. Ortho Surg., Path Proct Surg Urol.
Roswell Park Memorial Institute	Buffalo N Y	Mal Dis. Rad.
Sisters of Charity Hospital	Buffalo N Y	Obst. Surg
Veterans Admin Hospital	Buffalo N Y	Anes. Int. Med. Ortho Surg., Psych Surg
Mary McClellan Hospital	Cambridge N Y	Surg
Veterans Admin Hospital	Canandaigua N Y	Psych
Veterans Admin Hospital	Castle Point N Y	Pul. Dis Thor Surg.
Central Islip State Hospital	Central Islip N Y	Psych
Clifton Springs Sanitarium and Clinic	Clifton Springs, N Y	Int Med. Rad. Surg
Mary Imogene Bassett Hospital	Cooperstown N Y	Int Med., Ped Surg
Nassau County Tuberculosis Hospital	Farmingdale N Y	Pul Dis.
St Joseph's Hospital	Far Rockaway N Y	Gen'l Pract
Flushing Hospital	Flushing N Y	Anes Int. Med Ob-Gyn Path Ped Surg
Hillside Hospital	Glen Oaks, N Y	Psych.
Gowanda State Homeopathic Hospital	Helmuth N Y	Psych.
Meadowbrook Hospital	Hempstead N Y	Int. Med Mal Dis Obst. Ortho Surg Path. Rad Surg.
Irvington House	Irvington-on Hudson N Y	Card Dis.
Cornell University Infirmary	Ithaca N Y	Int Med.
Tompkins Memorial Hospital	Ithaca N Y	Int Med.
Herman M Biggs Memorial Hospital	Ithaca N Y	Pul Dis Thor Surg.
Jamaica Hospital	Jamaica, N Y	Surg
Mary Immaculate Hospital	Jamaica N Y	Anes. Int. Med Obst Path. Ped Surg
Queens General Hospital	Jamaica N Y	Cont. Dis. Int. Med Ob-Gyn Ophth. Otol Ortho Surg Path Ped. Rad. Surg Urol.
Triboro Hospital	Jamaica N Y	Pul Dis. Thor Surg
Charles S. Wilson Memorial Hospital	Johnson City N Y	Int Med. Obst. Path Rad Surg
Pine Wood Sanitarium	Katonah N Y	Psych.
Kings Park State Hospital	Kings Park, N Y	Psych.
Benedictine Hospital	Kingston N Y	Gen'l Pract
Niagara Sanatorium	Lockport, N Y	Pul. Dis.
River Crest Sanitarium	Long Island City N Y	Psych.
St. John's Long Island City Hospital	Long Island City N Y	Path.
Marcy State Hospital	Marcy N Y	Psych.
Middletown State Homeopathic Hospital	Middletown N Y	Psych.
Nassau Hospital	Mineola N Y	Obst Ortho Surg Path Surg
Mount Vernon Hospital	Mount Vernon N Y	Int. Med Path. Rad Surg.
New Rochelle Hospital	New Rochelle N Y	Int. Med. Path. Rad Surg
Bellevue Hospital—Div I Columbia University	New York City N Y	Int. Med. Pul. Dis Surg Thor Surg
Bellevue Hospital—Div II Cornell University	New York City N Y	Int Med. Neur Neuro Surg Surg Urol
Bellevue Hospital—Div III New York University	New York City N Y	Anes Card Dis. Derm Syph Int. Med, Neur Neuro Surg Ob.-Gyn. Ophth. Otol. Ped Psych Rad Surg Phys. Med.
Bellevue Hospital—Div IV New York University	New York City N Y	Int. Med Ortho Surg Path. Rad. Surg.
Beth David Hospital	New York City N Y	Int. Med.
Beth Israel Hospital	New York City N Y	Anes., Int Med Neur Neuro Surg Ob-Gyn Ophth. Otol Path., Ped. Rad. Surg., Urol.
Bronx Eye and Ear Infirmary	New York City N Y	Ophth.
Bronx Hospital	New York City N Y	Int Med Ob-Gyn Path. Ped Rad., Surg
Doctors Hospital	New York City N Y	Path. Rad.

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Flower and Fifth Avenue Hospitals	New York City N Y	Anes. Int Med Ob Gyn Otol Ortho Surg Path Ped Rad Surg
Fordham Hospital	New York City N Y	Int Med Neur Ob-Gyn Path. Ped Surg
French Hospital	New York City N Y	Int Med Ob-Gyn. Rad., Surg. Urol
Goldwater Memorial Hospital	New York City N Y	Anes Int Med Neur Ophth Path Phys Med Rad Surg
Gouverneur Hospital	New York City N Y	Int Med Ped Surg
Harlem Hospital	New York City N Y	Int Med Ob Gyn Otol Ped Rad Surg
Hospital for Joint Diseases	New York City N Y	Anes Int Med Gyn Ortho Surg Path Phys Med Rad
Hospital for Special Surgery	New York City N Y	Anes Int Med Ortho Surg Phys Med
Jewish Memorial Hospital	New York City N Y	Int Med Ob Gyn Path
Knickerbocker Hospital	New York City N Y	Int Med Surg
Lebanon Hospital	New York City N Y	Int Med Path. Surg
Lenox Hill Hospital	New York City N Y	Anes Gastro Int Med Neur Ob-Gyn Ophth Otol Ortho Surg Path. Ped Pul Dis Rad. Surg
Lincoln Hospital	New York City N Y	Int Med Ob-Gyn Path Ped Rad Surg
Manhattan Eye Ear and Throat Hospital	New York City N Y	Ophth Otol
Manhattan General Hospital	New York City N Y	Pul Dis
Manhattan State Hospital	New York City N Y	Psych
Memorial Hospital	New York City N Y	Anes Int Med Mal. Dis Path Rad. Surg
Metropolitan Hospital	New York City N Y	Derm Syph Int Med. Neur Ob Gyn Ophth. Otol. Ortho Surg Path Ped Pul Dis Surg Thor Surg Urol.
Misericordia Hospital	New York City N Y	Obst
Montefiore Hospital for Chronic Diseases	New York City N Y	Anes Int Med. Mal. Dis. Neur Ophth Path. Pul Dis. Rad. Surg
Morrisania City Hospital	New York City N Y	Int Med Neur Obst Path Ped Pul Dis Rad Surg Urol
Mother Cabrini Memorial Hospital	New York City N Y	Surg
Mount Sinai Hospital	New York City N Y	Anes Derm Syph Int Med Neur Neuro Surg Gyn Ophth Otol Ortho Surg Path. Ped. Phys Med Psych Rad. Surg Urol.
New York City Cancer Institute Hospital	New York City N Y	Mal Dis
New York City Hospital	New York City N Y	Anes Derm Syph. Int Med. Neur Ob-Gyn. Ophth. Otol. Path Ped. Phys Med. Rad Surg Urol.
New York Eye and Ear Infirmary	New York City N Y	Ophth. Otol
New York Foundling Hospital	New York City N Y	Ped
New York Hospital	New York City N Y	Allergy Anes Derm Syph Int Med Ob Gyn Ophth Otol. Ortho Surg., Path Ped Plas Surg Psych Rad Surg Urol
New York Infirmary	New York City N Y	Int Med Obst Ped Surg
New York Polyclinic Medical School and Hospital	New York City N Y	Anes Derm Syph. Int Med. Ob Gyn Ophth Otol Path. Rad Surg Urol
New York State Psychiatric Institute and Hospital	New York City N Y	Psych.
Presbyterian Hospital	New York City N Y	Anes Derm Syph Int Med Neur Neuro Surg Ob-Gyn Ophth Otol. Ortho Surg Path Ped Phys Med Plas Surg Rad Surg. Urol.
Roosevelt Hospital	New York City N Y	Allergy Derm Syph Int. Med Gyn. Otol Path. Ped Rad. Surg Urol.
St Barnabas Hospital for Chronic Diseases	New York City N Y	Int Med Path.
St Clare's Hospital	New York City N Y	Anes Int Med. Ob Gyn Path. Ped. Surg Urol.
St Francis Hospital	New York City N Y	Int Med Ob-Gyn.
St Joseph Hospital for Chest Diseases	New York City N Y	Pul Dis
St Luke's Hospital	New York City N Y	Anes Card Dis Derm Syph. Int Med Ophth Otol Ortho. Surg. Path. Ped Phys Med Rad Surg. Urol
St Vincent's Hospital	New York City N Y	Anes Int Med Neur Neuro. Surg. Ob-Gyn Path Ped. Rad. Surg.
Seton Hospital	New York City N Y	Pul Dis Thor Surg.
Sydenham Hospital	New York City N Y	Anes Int Med Ob-Gyn. Path., Rad Surg
University Hospital	New York City N Y	Allergy Anes Derm Syph Int Med. Gyn., Ophth. Otol. Path Ped. Rad. Surg Urol.
Veterans Admin Hospital	New York City N Y	Anes Derm Syph Int Med Neur Neuro Surg Ophth Otol. Ortho. Surg. Path Phys. Med Plast Surg Psych. Rad. Surg Thor Surg Urol
Willard Parker Hospital	New York City N Y	Cont Dis Path Pul Dis
Woman's Hospital	New York City N Y	Ob-Gyn
Veterans Admin Hospital	Northport N Y	Psych
Homer Folks Tuberculosis Hospital	Oneonta N Y	Pul Dis Thor Surg
Rockland State Hospital	Orangeburg N Y	Psych
Stony Lodge Sanitarium	Ossining N Y	Psych
Municipal Sanatorium	Otisville N Y	Pul Dis
United Hospital	Port Chester N Y	Int Med Obst Path. Rad Surg
St Charles Hospital for Crippled Children	Port Jefferson N Y	Ortho Surg
Hudson River State Hospital	Poughkeepsie N Y	Psych
Vassar Brother Hospital	Poughkeepsie N Y	Gen Pract
Creedmoor State Hospital	Queens Village N Y	Psych
Ray brook State Tuberculosis Hospital	Ray brook N Y	Pul Dis Thor Surg
Genesee Hospital	Rochester N Y	Anes, Int Med Ob-Gyn., Ped Rad., Surg
Highland Hospital	Rochester N Y	Int Med Obst Surg
Iola Monroe County Tuberculosis Sanatorium	Rochester N Y	Pul. Dis
Rochester General Hospital	Rochester N Y	Anes Int Med Obst Ophth Otol. Ortho Surg Path. Ped Rad Surg.
Rochester State Hospital	Rochester N Y	Psych
St Mary's Hospital	Rochester N Y	Anes Int Med Ophth. Path Rad, Surg
Strong Memorial Rochester Municipal Hospitals	Rochester N Y	Int Med Neuro Surg., Ob Gyn Ophth Otol. Ortho Surg Path. Ped., Plast Surg Psych Rad. Surg Urol.
St Francis Sanatorium for Cardiac Children	Roslyn L.I. N Y	Card Dis
U S Naval Hospital	St Albans N Y	Anes Derm Syph. Int. Med Ob-Gyn Ophth. Ortho Surg Path Rad Surg Thor Surg
Ellis Hospital	Schenectady N Y	Anes Int. Med Obst Ortho Surg Path Rad., Surg
Schenectady County Tuberculosis Hospital	Schenectady N Y	Pul Dis
U S Public Health Service Hospital	Stapleton (Staten Island) N Y	Anes Derm Syph Int Med Ophth Ortho Surg Path. Rad Surg Urol.
St Vincent's Hospital	Staten Island N Y	Int Med., Ortho Surg Ped.
Sea View Hospital	Staten Island N Y	Ophth Otol Ortho Surg Ped Pul Dis Rad Thor Surg Urol
Staten Island Hospital	Staten Island N Y	Int Med
Veterans Admin Hospital	Sunmount N Y	Pul Dis
Crouse Irving Hospital	Syracuse N Y	Rad
General Hospital	Syracuse N Y	Ob Gyn
Hospital of the Good Shepherd	Syracuse N Y	Int Med Surg
St Joseph's Hospital	Syracuse N Y	Ob-Gyn
Syracuse Memorial Hospital	Syracuse N Y	Anes Neuro Surg Ob Gyn Ophth Ped
Syracuse Psycopathic Hospital	Syracuse N Y	Psych.
Syracuse University Medical Center	Syracuse N Y	Anes Ophth Otol Path Rad
Letchworth Village	Thiells N Y	Psych
Samaritan Hospital	Troy N Y	Path
Trudeau Sanatorium	Trudeau N Y	Pul Dis
Utica State Hospital	Utica N Y	Psych
Grasslands Hospital	Valhalla N Y	Anes Int Med Ophth. Otol Path Ped Psych Pul Dis Rad Surg
Pilgrim State Hospital	West Brentwood N Y	Psych
Rehabilitation Hospital	West Haverstraw N Y	Ortho Surg Phys Med
New York Hospital Westchester Div	White Plains N Y	Psych
White Plains Hospital	White Plains N Y	Int Med Surg
Willard State Hospital	Willard N Y	Psych
Harlem Valley State Hospital	Wingdale N Y	Psych
Charlotte Memorial Hospital	Charlotte N C	Int Med Ob Gyn Ortho Surg Path Ped Rad Surg Urol
Duke Hospital	Durham N C	Allergy Anes., Derm. Syph. Gastro., Int. Med Neur Neuro. Surg Ob-Gyn Ophth Otol Ortho Surg Path Ped Plas Surg Psych Pul. Dis Rad Surg Urol

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Eastern Medical Center	Durham N C	Syph
Lincoln Hospital	Durham N C	Surg
McPherson Hospital	Durham N C	Ophth.
Watts Hospital	Durham N C	Int Med Obst Path Ped Rad Surg Urol
North Carolina Orthopedic Hospital	Gastonia N C	Ortho Surg
Sternberger Hospital for Women and Children	Greensboro N C	Ped
North Carolina Sanatorium for the Treatment of Tuberculosis	McCain N C	Pul Dis
Veterans Admin Hospital	Oteen N C	Path Pul Dis Thor Surg
Rex Hospital	Raleigh N C	Int Med Ped
Babies Hospital	Wilmington N C	Ped
James Walker Memorial Hospital	Wilmington N C	Int Med Ped Surg
City Memorial Hospital	Winston-Salem N C	Int Med Ped Surg
Kate Bitting Reynolds Memorial Hospital	Winston-Salem N C	Int Med Surg
North Carolina Baptist Hospital	Winston-Salem N C	Int Med Neur Ob-Gyn Ophth Otol Ortho Surg Path Ped Psych Rad Surg Urol
Bismarck Hospital	Bismarck N D	Int Med Rad Surg
St Luke's Hospital	Fargo N D	Int Med. Surg
Children's Hospital	Akron Ohio	Ortho Surg Ped Surg.
City Hospital	Akron Ohio	Int Med Ob-Gyn Ortho Surg Path Rad Surg
Peoples Hospital	Akron Ohio	Gen'l Pract Int Med. Ob-Gyn Path Rad Surg
St Thomas Hospital	Akron Ohio	Int Med Ob-Gyn. Surg
Veterans Admin Hospital	Brecksville Ohio	Pul. Dis
Aultman Hospital	Canton Ohio	Int Med. Ob-Gyn Path Rad Surg
Mercy Hospital	Canton Ohio	Anes Int Med Ob-Gyn Rad Surg
Windsor Hospital	Chagrin Falls Ohio	Psych
Bethesda Hospital	Cincinnati Ohio	Ob-Gyn Path
Children's Hospital	Cincinnati Ohio	Ortho Surg Ped Surg
Christ Hospital	Cincinnati Ohio	Int Med Neuro Surg Path Psych Surg
Cincinnati General Hospital	Cincinnati Ohio	Derm Syph Int Med. Neur Neuro Surg Obst Ophth Otol Ortho Surg Path Ped Psych. Rad Surg Urol
Deaconess Hospital	Cincinnati Ohio	Int Med Surg
Dunham Hospital	Cincinnati Ohio	Pul Dis
Good Samaritan Hospital	Cincinnati Ohio	Gen'l Pract Int Med Neuro Surg Path Ped Rad Surg
Jewish Hospital	Cincinnati Ohio	Int Med Ortho Surg Path. Rad Surg
Longview State Hospital	Cincinnati Ohio	Psych
St Mary's Hospital	Cincinnati Ohio	Surg
City Hospital	Cleveland Ohio	Cont Dis Derm Syph., Int Med Ob-Gyn. Ophth Otol Path Pul Dis Rad Surg Thor Surg Urol
Cleveland Clinic Hospital	Cleveland Ohio	Anes Derm Syph Int Med Neur Neuro Surg Ophth Otol Ortho Surg Path. Phys. Med Psych Rad Surg Urol
Cleveland State Hospital	Cleveland Ohio	Psych
Cleveland State Receiving Hospital	Cleveland Ohio	Psych
Fairview Park Hospital	Cleveland Ohio	Int Med Obst Surg
Lutheran Hospital	Cleveland Ohio	Int Med Obst Rad Surg
Mount Sinai Hospital	Cleveland Ohio	Anes. Int Med Ob-Gyn Ortho Surg Path Rad Surg
St. Alexis Hospital	Cleveland Ohio	Int Med Surg
St. Anne's Maternity Hospital	Cleveland Ohio	Obst
St. John's Hospital	Cleveland Ohio	Int Med. Ob-Gyn Surg
St Luke's Hospital	Cleveland Ohio	Anes Int Med Ob-Gyn Ophth Otol Ortho Surg Path Rad Surg
St Vincent Charity Hospital	Cleveland Ohio	Int Med Path Rad Surg
U S. Public Health Service Hospital	Cleveland Ohio	Surg
University Hospital	Cleveland Ohio	Derm Syph Int Med Ob-Gyn Ophth Otol. Ortho Surg Path. Ped Psych. Rad Surg Urol
Veterans Admin Hospital	Cleveland Ohio	Int Med Neur Neuro Surg Ophth. Otol Ortho Surg Path Phys Med Psych Rad Surg Thor Surg Urol
Doctors Hospital	Cleveland Heights Ohio	Surg
Benjamin Franklin Hospital	Columbus Ohio	Pul Dis Thor Surg
Children's Hospital	Columbus Ohio	Ortho Surg Ped.
Columbus State Hospital	Columbus Ohio	Psych.
Grant Hospital	Columbus Ohio	Path
Mount Carmel Hospital	Columbus Ohio	Int Med Obst Ortho Surg Surg
Ohio State University Hospital	Columbus Ohio	Anes Card Dis. Gastro Int. Med Ob.-Gyn Ophth Otol Path Rad Surg Urol
St Anne's Maternity Hospital	Columbus Ohio	Obst
St Francis Hospital	Columbus Ohio	Surg
White Cross Hospital	Columbus Ohio	Card Dis Int Med Neuro Surg Obst. Ortho Surg Path Surg
Miami Valley Hospital	Dayton Ohio	Int Med Obst Path Rad Surg.
St. Elizabeth Hospital	Dayton Ohio	Rad Surg
Veterans Admin Hospital	Dayton Ohio	Anes Int. Med Path Rad Surg. Urol
Huron Road Hospital	East Cleveland Ohio	Anes Int Med Path. Surg Urol.
Elyria Memorial Hospital and Gates Hospital for Crippled Children	Elyria Ohio	Ortho Surg
Mercy Hospital	Hamilton Ohio	Path Surg
Lakewood Hospital	Lakewood Ohio	Int Med Obst Surg
Lima Memorial Hospital	Lima Ohio	Gen'l Pract
St Rita's Hospital	Lima Ohio	Gen'l Pract., Int Med Obst Path Surg
Mansfield General Hospital	Mansfield Ohio	Surg
Massillon State Hospital	Massillon Ohio	Psych
Springfield City Hospital	Springfield Ohio	Path
Maumee Valley Hospital	Toledo Ohio	Anes Int Med Obst Surg
Mercy Hospital	Toledo Ohio	Int Med. Ob-Gyn, Path Ped. Surg
St Vincent's Hospital	Toledo Ohio	Gen'l Pract. Int Med Neuro Surg Ob-Gyn Ortho Surg Path Rad. Surg Urol
Toledo Hospital	Toledo Ohio	Gen'l Pract Int Med Ob-Gyn Path. Surg
Sunny Acres Cuyahoga County Tuberculosis Hospital	Warrensville Ohio	Pul Dis.
Harding Sanitarium	Worthington Ohio	Psych
Mahoning County Tuberculosis Sanatorium	Youngstown Ohio	Pul Dis
St Elizabeth's Hospital	Youngstown Ohio	Int Med Ob-Gyn Rad Surg
Youngstown Hospital	Youngstown Ohio	Anes Int Med Ortho Surg Path Proct Rad Surg
Central Oklahoma State Hospital	Norman Okla	Psych
Bone and Joint Hospital and McBride Clinic	Oklahoma City Okla	Ortho Surg
St Anthony Hospital	Oklahoma City Okla	Int Med Ob-Gyn Ortho Surg. Surg
University Hospital	Oklahoma City Okla	Anes Derm Syph Int Med. Neuro Surg Ob-Gyn Ophth Otol Ortho Surg Path Ped Plast Surg Rad Surg Urol
Veteran Admin Hospital	Oklahoma City Okla	Int Med Ophth Ortho Surg Rad Surg
Wesley Hospital	Oklahoma City Okla	Int Med Ob-Gyn Surg.
Hillcrest Memorial Hospital	Tulsa Okla	Int Med Path Ped Surg Urol
St John's Hospital	Tulsa Okla	Int Med Obst Ped Surg Urol
Emanuel Hospital	Portland Ore	Int Med Ob-Gyn Ortho Surg Path Surg
Good Samaritan Hospital	Portland Ore	Int Med Path
Providence Hospital	Portland Ore	Int Med Path Surg
St Vincent's Hospital	Portland Ore	Int Med Obst Path Rad Surg Urol
Shriners Hospital for Crippled Children	Portland Ore	Ortho Surg
University of Oregon Medical School Hospitals and Clinics	Portland Ore	Anes Derm Syph Int Med Neur Neuro Surg Ob-Gyn Ophth. Otol Ortho Surg Path. Ped. Rad. Surg Thor Surg Urol.
Veteran Admin Hospital	Portland Ore	Anes Int Med Ophth Otol Ortho Surg Phys Med Rad Surg Urol

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Oregon State Hospital	Salem Ore	Psych.
Abington Memorial Hospital	Abington Pa	Anes Int Med Ob -Gyn Path Ped Rad. Surg
Allentown Hospital	Allentown Pa	Int Med. Path Plas Surg Proct Surg Urol
Allentown State Hospital	Allentown Pa	Psych
Sacred Heart Hospital	Allentown Pa	Int. Med Path Surg
Veterans Admin Hospital	Aspinwall Pa	Allergy Derm Syph Int. Med Ophth. Otol Ortho Surg Path., Phy Med Rad Surg Urol
St. Luke's Hospital	Bethlehem Pa	Int Med Ob -Gyn Path Surg
Bradford Hospital	Bradford Pa	Gen'l Pract Surg
Bryn Mawr Hospital	Bryn Mawr Pa	Int Med Ob Gyn Path Rad. Surg
Veterans Admin Hospital	Coatesville Pa	Neur Psych.
Danville State Hospital	Danville Pa	Psych
George F Geisinger Memorial Hospital	Danville Pa	Int Med Obst. Ophth. Otol Path Rad Surg Urol.
Fitzgerald Mercy Hospital	Darby Pa	Ob.-Gyn Path
Eagleville Sanatorium for Consumptives	Eagleville Pa	Pul Dis
Easton Hospital	Easton Pa	Int Med Surg
State Hospital for Crippled Children	Elizabethtown Pa	Ortho Surg
Hamot Hospital	Erie Pa	Int. Med Ortho Surg Path Surg
St Vincent's Hospital	Erie Pa	Rad Surg Urol
Marymount Hospital	Garfield Heights Ohio	Anes
Westmoreland Hospital Association	Greensburg Pa	Int. Med
Pennsylvania State Sanatorium for Tuberculosis	Hamburg Pa	Pul Dis.
Harrisburg Hospital	Harrisburg Pa	Int Med Obst Surg Urol.
Harrisburg Polyclinic Hospital	Harrisburg Pa	Int. Med Surg
Harrisburg State Hospital	Harrisburg Pa	Psych.
Hazleton State Hospital	Hazleton Pa	Surg
Lancaster General Hospital	Lancaster Pa	Path
St Joseph's Hospital	Lancaster Pa	Path. Surg
Norristown State Hospital	Norristown Pa	Psych
American Oncologic Hospital	Philadelphia Pa	Mal Dis Rad
Children's Hospital	Philadelphia Pa	Ortho Surg Ped Surg
Children's Hospital of the Mary J Drexel Home	Philadelphia Pa	Ped
Doctors Hospital	Philadelphia Pa	Surg
Episcopal Hospital	Philadelphia Pa	Int Med Ob -Gyn Path Rad Surg Thor Surg Urol.
Frankford Hospital	Philadelphia Pa	Ob -Gyn Path Rad Surg
Friends Hospital	Philadelphia Pa	Psych
Germantown Hospital and Dispensary	Philadelphia Pa	Int Med Ob -Gyn Path Ped Rad Surg
Graduate Hospital of the University of Pennsylvania	Philadelphia Pa	Anes Derm Syph Gastro Int Med Neur Neuro. Surg Gyn Ophth. Otol Ortho Surg Path Ped Plas. Surg Rad Surg Urol.
Hahnemann Hospital	Philadelphia Pa	Anes, Int Med Ob -Gyn Ortho. Surg Path. Ped. Rad Surg Thor Surg., Urol
Hospital of the University of Pennsylvania	Philadelphia Pa	Anes Derm Syph , Gastro Int Med. Neur Neuro Surg Ob -Gyn., Ophth Otol Ortho Surg Path Ped Phys. Med Psych Rad Surg Urol.
Hospital of the Women's Medical College of Pennsylvania	Philadelphia Pa	Anes Card Dis Int Med Ob -Gyn Path Ped Rad. Surg.
Institute of the Pennsylvania Hospital	Philadelphia Pa	Psych
Jeanes Hospital	Philadelphia Pa	Mal Dis Rad
Jefferson Medical College Hospital	Philadelphia Pa	Derm Syph. Gastro Int Med Neur Neuro Surg Ob -Gyn. Ophth Otol. Ortho Surg Path. Ped. Plas. Surg Proct. Psych Pul Dis. Rad Surg Urol
Jewish Hospital	Philadelphia Pa	Anes Int Med Gyn Path. Ped Rad. Surg Urol
Lankenau Hospital	Philadelphia Pa	Anes Int Med Obst Path. Surg Urol.
Mercy Douglass Hospital	Philadelphia Pa	Ob -Gyn Rad
Methodist Episcopal Hospital	Philadelphia Pa	Int Med Surg
Misericordia Hospital	Philadelphia Pa	Surg
Mount Sinai Hospital	Philadelphia, Pa	Anes. Int Med. Ob -Gyn. Path Ped Psych Rad. Surg Urol.
Nazareth Hospital	Philadelphia Pa	Rad
Pennsylvania Hospital	Philadelphia Pa	Card Dis Derm Syph. Int Med Ob -Gyn. Otol. Path., Rad. Surg Urol
Pennsylvania Hospital Department for Mental and Nervous Diseases	Philadelphia Pa	Psych
Philadelphia General Hospital	Philadelphia Pa	Card Dis Derm Syph. Intl Med Neur Ob -Gyn. Ophth Ortho. Surg Path Ped Phys Med Psycho Pul Dis Rad Surg Urol
Philadelphia Hospital for Contagious Diseases	Philadelphia Pa	Cont Dis
Philadelphia Psychiatric Hospital	Philadelphia Pa	Psych
Philadelphia State Hospital	Philadelphia Pa	Psych
Presbyterian Hospital	Philadelphia Pa	Anes Int Med., Path Rad. Surg Urol.
St. Christopher's Hospital for Children	Philadelphia Pa	Ped
St Joseph's Hospital	Philadelphia Pa	Surg
St. Luke's Hospital (and Children's Medical Center)	Philadelphia Pa	Ped
St Mary's Hospital	Philadelphia Pa	Surg
Shriners Hospital for Crippled Children	Philadelphia Pa	Ortho Surg
Skin and Cancer Hospital	Philadelphia Pa	Derm Syph
Temple University Hospital	Philadelphia Pa	Anes Gastro Int. Med Neuro. Surg Ob -Gyn Ophth Otol Ortho. Surg Path Ped Proct Psych Rad Surg Urol
U S Naval Hospital	Philadelphia Pa	Anes., Derm Syph Int Med Neur Ob -Gyn Ophth Otol Ortho Surg., Path. Ped Psych Rad Surg Urol.
Wills Hospital	Philadelphia Pa	Ophth
Woman's Hospital	Philadelphia Pa	Int Med. Ob Gyn. Surg
Allegheny General Hospital	Pittsburgh Pa	Anes Int Med Ortho Surg Path. Ped Surg Urol
Children's Hospital	Pittsburgh Pa	Ortho Surg, Path Ped Surg
Elizabeth Steel Magee Hospital	Pittsburgh Pa	Int. Med Ob Gyn
Eye Ear Nose and Throat Hospital	Pittsburgh Pa	Ophth , Otol
Mercy Hospital	Pittsburgh Pa	Anes. Int Med Neuro. Surg Ob -Gyn Otol Path Rad Surg. Urol.
Montefiore Hospital	Pittsburgh, Pa	Allergy Int Med Obst Path Rad Surg
Pittsburgh Hospital	Pittsburgh Pa	Ob -Gyn Surg
Presbyterian Hospital	Pittsburgh Pa	Card Dis Int Med Ortho. Surg Path. Plas. Surg Proct Surg Urol.
St. Francis Hospital	Pittsburgh Pa	Anes. Card Dis Int Med Neur Ob -Gyn. Ortho Surg Path. Psych., Rad Surg
St Margaret Memorial Hospital	Pittsburgh Pa	Ob Gyn Int Med
South Side Hospital	Pittsburgh Pa	Ob -Gyn.
Tuberculosis League Hospital	Pittsburgh Pa	Pul Dis.
University of Pittsburgh Medical Center	Pittsburgh Pa	Derm Syph Rad Urol
Western Pennsylvania Hospital	Pittsburgh Pa	Int. Med Neuro. Surg Path. Ped. Rad. Surg
Western State Psychiatric Institute and Clinic	Pittsburgh Pa	Psych
Community General Hospital	Reading Pa	Gen'l Pract
Reading Hospital	Reading Pa	Int Med Ortho Surg Path Proct Rad. Surg
St Joseph's Hospital	Reading Pa	Int. Med Rad Surg
Robert Packer Hospital	Sayre Pa	Anes Int Med. Neuro. Surg Ophth Otol Ortho Surg Path. Ped. Rad Surg Urol
Scranton State Hospital	Scranton Pa	Int Med Path.
Sharon General Hospital	Sharon Pa	Anes Rad
Warren State Hospital	Warren Pa	Psych.
Chester County Hospital	West Chester Pa	Rad
Mercy Hospital	Wilkes-Barre Pa	Surg Urol
Wilkes-Barre General Hospital	Wilkes Barre Pa	Int Med. Obst Surg
Columbia Hospital	Wilkinsburg Pa	Surg
Williamsport Hospital	Williamsport Pa	Path Surg.
Woodville State Hospital	Woodville Pa	Psych

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
York Hospital	York Pa	Int Med Path Surg
State Hospital for Mental Diseases	Howard R I	Psych.
Butler Hospital	Providence R I	Psych
Charles V Chapin Hospital	Providence R I	Ped. Psych.
Providence Lying In Hospital	Providence R I	Obst.
Rhode Island Hospital	Providence R.I	Anes. Card. Dis. Int Med Gyn Ortho Surg Path Ped Rad Surg Urol
Roger Williams General Hospital.	Providence R I	Rad
Roper Hospital	Charleston S C	Anes Int. Med., Ob-Gyn. Ophth Ortho. Surg Path. Ped Rad Surg Urol
Columbia Hospital	Columbia, S C	Int Med Ob-Gyn Ortho Surg., Ped Rad.
Veterans Admin Hospital	Columbia S C	Int Med. Ortho Surg Rad Surg Urol.
Greenville General Hospital	Greenville S C	Ob-Gyn Ortho Surg.
Shriners Hospital for Crippled Children	Greenville S C	Ortho Surg
Orangeburg Regional Hospital (Urological Institute)	Orangeburg S C	Urol
Spartanburg General Hospital	Spartanburg S C	Rad
Baroness Erlanger Hospital	Chattanooga Tenn	Anes Int Med. Obst Ortho Surg Path Surg
Newell Hospital	Chattanooga Tenn	Surg
T C Thompson Children's Hospital	Chattanooga Tenn	Ped.
Knoxville General Hospital	Knoxville Tenn	Int. Med Ophth. Otol Ped Surg
Madison Rural Hospital and Sanitarium	Madison College Tenn	Gen'l Pract.
Baptist Memorial Hospital	Memphis, Tenn	Int Med Neuro Surg Ob-Gyn Path Ped Rad Surg Thor Surg Urol.
Campbell Clinic Hospital	Memphis Tenn	Ortho Surg
Gailor Memorial Psychiatric Hospital	Memphis Tenn	Psych.
John Gaston Hospital	Memphis Tenn	Anes Int Med Ob-Gyn. Ophth. Otol Path. Ped Rad Surg Urol.
Memphis Eye Ear Nose and Throat Hospital	Memphis Tenn	Ophth
Methodist Hospital	Memphis Tenn	Obst. Path, Ped. Rad Surg
St Joseph's Hospital	Memphis Tenn	Int Med Ob-Gyn Path Ped Surg. Urol
Veterans Admin Hospital	Memphis Tenn	Anes Int Med Neuro Surg Ophth. Otol. Ortho Surg Path Pul Dis Rad. Surg Thor Surg. Urol
George W Hubbard Hospital of Meharry Medical College	Nashville Tenn	Int. Med Ob-Gyn Path Ped Surg.
Mid State Baptist Hospital	Nashville Tenn	Surg
Nashville General Hospital	Nashville Tenn	Int Med Ob-Gyn. Ophth Path Surg Urol
St Thomas Hospital	Nashville Tenn	Int Med. Obst Ped Surg.
Vanderbilt University Hospital	Nashville Tenn	Anes Int. Med Neuro Surg Ob-Gyn Path Ped Psych Rad Surg
Veterans Admin Hospital	Nashville Tenn	Int Med Path Rad Surg
Oakville Memorial Sanatorium	Oakville Tenn	Pul Dis.
Brackenridge Hospital	Austin Texas	Gen'l Pract Path Surg
Baylor University Hospital	Dallas Texas	Anes Int Med Ob-Gyn Ortho Surg Path. Plas Surg Rad Surg Thor Surg
Children's Medical Center	Dallas Texas	Ped
Gaston Hospital	Dallas Texas	Surg
Methodist Hospital	Dallas Texas	Int Med Ob-Gyn Rad, Surg
Parkland Hospital	Dallas Texas	Derm Syph. Int. Med. Ob-Gyn Ortho Surg. Path Psych Rad Surg Urol
St. Paul's Hospital	Dallas Texas	Int. Med., Path Ped Rad. Surg
Texas Scottish Rite Hospital for Crippled Children	Dallas, Texas	Ortho Surg
Timberlawn Sanitarium	Dallas Texas	Psych.
Veterans Admin Hospital	Dallas Texas	Int. Med Ophth Otol. Ortho Surg Path Rad Surg Urol
Hotel Dieu Sisters Hospital	El Paso Texas	Obst
All Saints Hospital	Fort Worth Texas	Gen'l Pract.
City-County Hospital	Fort Worth Texas	Gen'l Pract
Harris Hospital	Fort Worth Texas	Int. Med Ob-Gyn Surg
St. Joseph Hospital	Fort Worth Texas	Gen'l Pract
U S Public Health Service Hospital	Fort Worth Texas	Psych
Galveston State Psychopathic Hospital	Galveston, Texas	Neur Psych.
St. Mary's Hospital	Galveston Texas	Gen'l Pract
University of Texas Medical Branch Hospitals	Galveston Texas	Anes Card Dis Derm Syph Int Med Neuro Surg Ob-Gyn Ophth. Otol, Ortho Surg Path. Ped. Plas Surg Psych Rad Surg Urol.
Hermann Hospital	Houston Texas	Anes Int Med Ob Gyn, Ortho Surg Path Ped Rad Surg Urol
Jefferson Davis Hospital	Houston Texas	Int Med. Ob Gyn. Ophth. Otol Ortho Surg. Path. Ped Surg Urol.
M D Anderson Hospital for Cancer Research	Houston Texas	Int. Med Mal Dis. Path Rad Surg
Memorial Hospital	Houston Texas	Int Med Ob-Gyn Surg
Methodist Hospital	Houston Texas	Int Med Neuro Surg Ob.-Gyn Rad Surg.
St Joseph's Infirmary	Houston Texas	Obst Ortho Surg Path Rad Surg
Southern Pacific Hospital	Houston Texas	Int. Med Surg
Veterans Admin Hospital	Houston Texas	Int Med Ophth Otol Path Phys Med Psych Pul Dis Surg Urol
Veterans Admin Hospital	Mckinney Texas	Anes. Int Med Ophth Ortho Surg Path Pul. Dis Rad, Surg Thor Surg Urol
Shannon West Texas Memorial Hospital	San Angelo Texas	Gen'l Pract
Baptist Memorial Hospital	San Antonio Texas	Path.
Brooke Army Hospital	San Antonio Texas	Anes, Card Dis Derm. Syph Int. Med. Ob-Gyn Ophth. Ortho Surg. Otol Path. Ped Rad. Surg Urol.
Robert B Green Memorial Hospital	San Antonio Texas	Gen'l Pract. Surg
Santa Rosa Hospital	San Antonio Texas	Int Med Path Ped Rad.
Kings Daughters Hospital	Temple Texas	Gen'l Pract.
Scott and White Memorial Hospital	Temple Texas	Int Med Ortho Surg Rad Surg
Veterans Admin Hospital	Waco Texas	Psych
Wichita Falls Clinic Hospital	Wichita Falls Texas	Int Med Rad. Surg Urol.
Wichita General Hospital	Wichita Falls Texas	Gen'l Pract
St Benedict's Hospital	Ogden Utah	Path
Thomas D Dee Memorial Hospital	Ogden Utah	Int Med Ob.-Gyn Surg
Dr W H Groves Latter Day Saints Hospital	Salt Lake City Utah	Anes Int. Med. Ob-Gyn Path. Surg
Holy Cross Hospital	Salt Lake City Utah	Int Med Obst Path., Surg.
St Mark's Hospital	Salt Lake City Utah	Ortho Surg Surg
Salt Lake County General Hospital	Salt Lake City Utah	Int Med. Ob.-Gyn Ortho Surg Path Ped Psych Surg
Veterans Admin. Hospital	Salt Lake City Utah	Int Med Ortho Surg Path. Rad Surg.
Bishop DeGoesbriand Hospital	Burlington Vt	Anes Int Med. Rad Surg
Mary Fletcher Hospital	Burlington Vt	Anes. Int Med., Ob-Gyn. Path Ped., Rad Surg Urol
Vermont State Hospital	Waterbury Vt	Psych.
Veterans Admin Hospital	White River Junction Vt	Anes. Int. Med Neuro Surg. Plas Surg Rad Surg Urol
Alexandria Hospital	Alexandria Va	Surg
Arlington Hospital	Arlington Va	Obst.,
University of Virginia Hospital	Charlottesville Va	Allergy Derm Syph. Int Med Neuro Surg, Ob-Gyn Ophth Otol. Ortho Surg Path Ped Psych. Rad. Surg Urol.
Chesapeake & Ohio Hospital	Clifton Forge Va	Int Med. Surg.
Memorial Hospital	Danville Va	Path.
Elizabeth Buxton Hospital	Newport News Va	Surg
Riverside Hospital	Newport News Va	Gen'l Pract Int Med Ob-Gyn Surg
De Paul Hospital	Norfolk, Va	Int Med Ob-Gyn Path Rad Surg
Norfolk General Hospital	Norfolk, Va	Int Med Obst Path. Rad, Surg
U S Naval Hospital	Portsmouth, Va	Gen'l Pract Int. Med. Ob.-Gyn. Psych.
Crippled Children's Hospital	Richmond, Va	Ortho Surg
Johnston-Willis Hospital	Richmond Va	Int Med
Medical College of Virginia (Hospital Division)	Richmond Va	Allergy Anes Derm Syph Int. Med Neuro Surg Obst Ophth. Otol. Ortho Surg Path Ped. Phys Med Psych. Rad Surg Urol
St Elizabeth Hospital	Richmond Va	Surg
Sheltering Arms Hospital	Richmond Va	Gen'l Pract

HOSPITALS APPROVED FOR RESIDENCY TRAINING—Continued

Name of Hospital	Location	Approved Residencies
Veterans Admin Hospital	Richmond Va	Anes Card Dis Gastro Int Med Neur Neuro Surg Ophth Ortho Surg., Path Psych Pul Di Rad Surg Thor Surg Urol
Gill Memorial Eye Ear and Throat Hospital	Roanoke Va	Ophth Otol
Jefferson Hospital	Roanoke Va	Int Med Surg
Lewis-Gale Hospital	Roanoke Va	Int Med Surg
Veterans Admin Hospital	Roanoke Va	Psych
Eastern State Hospital	Williamsburg Va	Psych
Madigan General Hospital	Fort Lewis Wash	Gen l Pract
Western State Hospital	Fort Steilacoom Wash	Psych
Eastern State Hospital	Medical Lake Wash	Psych
Children s Hospital	Seattle Wash	Ortho Surg Ped
Doctors Hospital	Seattle Wash	Int Med Surg
Firland Sanatorium	Seattle Wash	Pul Dis Thor Surg
King County Hospital No 1 (Harborview)	Seattle Wash	Anes Int Med Ob Gyn Ophth Ortho Surg Path. Ped. Surg
Pinel Foundation	Seattle Wash	Psych
Providence Hospital	Seattle Wash	Anes Gen l Pract Int Med. Obst Ortho Surg Path Surg
Swedish Hospital	Seattle Wash	Int Med Path Rad Surg
U S Public Health Service Hospital	Seattle Wash	Int Med Ophth Path Surg
Veterans Admin Hospital	Seattle Wash	Int Med
Virginia Mason Hospital	Seattle Wash	Anes Int Med Obst Rad Surg
Deaconess Hospital	Spokane Wash	Int Med Path.
Sacred Heart Hospital	Spokane Wash	Rad
St Luke s Hospital	Spokane Wash	Int Med Ob Gyn Path Surg
Shriners Hospital for Crippled Children	Spokane Wash	Ortho Surg
St Joseph Hospital	Tacoma Wash	Path
Tacoma General Hospital	Tacoma Wash	Anes Path
Northern Permanente Foundation	Vancouver Wash	Int Med
Veterans Admin Hospital	Walla Walla Wash	Pul Di
Beckley Hospital	Beckley W Va	Surg
Charleston General Hospital	Charleston W Va	Int Med Ortho Surg Path. Surg
Kanawha Valley Hospital	Charleston W Va	Surg
Chesapeake & Ohio Hospital	Huntington W Va	Int Med Surg
St Mary s Hospital	Huntington W Va	Int Med Obst Ortho Surg Surg Urol
Veterans Admin Hospital	Martinsburg W Va	Int Med Surg Thor Surg
Morris Memorial Hospital	Milton W Va	Ortho Surg
Laird Memorial Hospital	Montgomery W Va	Surg
St Joseph s Hospital	Parkersburg W Va	Surg
Myers Clinic Hospital	Philippi W Va	Surg
Ohio Valley General Hospital	Wheeling W Va	Anes
La Crosse Lutheran Hospital	La Crosse Wis	Int Med Surg Urol
Madison General Hospital	Madison Wis	Int Med Surg Urol
Methodist Hospital	Madison Wis	Rad Surg
St Mary s Hospital	Madison Wis	Int Med Rad
State of Wisconsin General Hospital	Madison Wis	Anes Derm Syph. Int. Med Neur Neuro Surg Ob-Gyn Ophth Otol., Ortho Surg Path Ped Psych. Rad. Surg Urol
St Joseph s Hospital	Marshfield Wis	Int Med Ophth Rad
Columbia Hospital	Milwaukee Wis	Int Med Obst Ortho Surg Path Rad Surg
Evangelical Deaconess Hospital	Milwaukee Wis	Gen l Pract Rad Surg
Milwaukee Children s Hospital	Milwaukee Wis	Ortho Surg Ped Surg
Milwaukee County Hospital	Milwaukee Wis	Allergy Anes Int Med Ob Gyn Ophth Otol. Path. Ped Proct Rad., Surg Urol
Milwaukee County Hospital for Mental Diseases	Milwaukee Wis	Psych.
Milwaukee Hospital	Milwaukee Wis	Gen l Pract Int Med Ob-Gyn Rad Surg
Mount Sinai Hospital	Milwaukee Wis	Int Med Ob Gyn Surg
Muirdale Sanatorium	Milwaukee Wis	Pul Dis.
St Joseph s Hospital	Milwaukee Wis	Int Med Ob-Gyn Path Rad. Surg
St Luke s Hospital	Milwaukee Wis	Ob Gyn Surg
St Mary s Hospital	Milwaukee Wis	Ob Gyn Path Surg
St Michael s Hospital	Milwaukee Wis	Gen l Pract
Veterans Admin Hospital	Milwaukee Wis	Anes Derm Syph Int Med Ophth Otol Ortho Surg Path. Pul. Dis. Rad Surg Urol
Wisconsin State Sanatorium	Statesan, Wis	Pul Di
Veterans Admin Hospital	Tomah Wis	Psych
Milwaukee Sanatorium	Wauwatosa Wis	Psych
Kapiolani Maternity and Gynecological Hospital	Honolulu Hawaii	Ob Gyn
Kauikeolani Children s Hospital	Honolulu Hawaii	Ped
Leahi Hospital	Honolulu Hawaii	Pul Dis Thor Surg
Queen s Hospital	Honolulu Hawaii	Int Med Ob Gyn Path Psych. Rad Surg
Shriners Hospital for Crippled Children	Honolulu Hawaii	Ortho Surg
Tripler Army Hospital	Honolulu Hawaii	Int Med Ob Gyn Rad Surg Urol
Territorial Hospital	Kaneohe Oahu Hawaii	Psych
Bayamon District Hospital	Bayamon P R	Ped
San Juan City Hospital	San Juan P R	Int Med Ped Surg
Gorgas Hospital	Ancon C Z	Int Med Ob Gyn Ophth. Path Surg

GRADUATE TRAINING PROGRAMS

Acceptable by the American Board of Psychiatry and Neurology

The Council on Medical Education and Hospitals has limited its approval of programs for graduate training to those offered in connection with general or special hospitals The following information is published, however, at the request of the American Board of Psychiatry and Neurology to indicate the availability of a special type of training which is acceptable to the board and carries full credit toward certification by that board

REQUIREMENTS FOR ACCEPTANCE

In order to facilitate the arrangements for training in child psychiatry (which constitutes a major aspect of modern psychiatry), the American Board of Psychiatry and Neurology will accept one year of training in psychiatric clinics for children which may or may not be a part of a hospital approved for residency training provided such a clinic gives adequate supervision and instruction for full time training during the entire third year of the required three year formal training period For the purpose of evaluating such clinics, the following conditions and criteria are deemed essential by the American Board of Psychiatry and Neurology

1 That the clinic have a full time medical director, psychologist, and social worker qualified by training and experience in child psychiatry and allied fields to supervise the training of residents

2 That the major portion of such training be devoted to therapy adequately supervised by this qualified staff

3 That the service and teaching activities of the clinic be integrated with those of the community and its social agencies

4 That clinic work be supplemented by seminars, case conferences, journal clubs or other opportunities for the discussion of the basic principles involved in outpatient work with children and parents teacher, public health and welfare agency personnel

5 That such a training clinic be well established in the community with a qualified staff that has operated together long enough as a team to insure stable and sound functioning

6 That the senior members of the clinic team show evidence of previous experience in the teaching of psychiatry in general child psychiatry in particular and their allied fields

These criteria set forth by the Board pertain more particularly to community sponsored clinics offering full time training in child psychiatry during the third year of formal residency training If these clinics are affiliated with hospitals already maintaining approved programs, separate approval is not required unless warranted on the basis of their meeting all requirements for straight fellowship training in child psychiatry

The following clinics are acceptable to the American Board of Psychiatry and Neurology as qualifying under these provisions

Center	Director
Pasadena Child Guidance Clinic 40 E Dayton Central Park Pasadena 2 Calif	Dr M B Durfee
Children s Psychiatric Division Langley Porter Clinic San Francisco	Dr Stanislaus Szurek
Institute for Juvenile Research 907 S Wolcott Ave Chicago	Dr Sophie S Sloman
Louisville Mental Hygiene Clinic and Child Study School 610 S Floyd Street Louisville Ky	Dr Spafford Ackerly
The Guidance Center 1737 Prytania Street New Orleans	Dr Milton F Kirkpatrick
The Psychiatric Clinic of the Mental Hygiene Society of Maryland Baltimore	Dr H Whitman Newell
Judge Baker Guidance Center 38 Beacon Street Boston	Dr George E. Gardner
Children s Center 244 Townsend Street Roxbury Mass	Dr Marian Putnam and Mrs. Beata Rank Co-directors
Worcester Child Guidance Clinic 2 State Street Worcester 5 Mass.	Dr Joseph Weinreb
Amherst H. Wilder Clinic 279 Rice Street St Paul	Dr Hyman S Lippman
Jewish Board of Guardians 228 East 19th Street New York 3	Dr Joachim Flescher
Central Clinic Cincinnati General Hospital Cincinnati	Dr Maurice Levine
Cleveland Guidance Center 2525 Euclid Avenue Cleveland	Dr Claire M Ness
Child Guidance Clinic 1711 Fitzwater Street Philadelphia 46	Dr Frederick H Allen
Pittsburgh Child Guidance Clinic 3004 Victoria Street Pittsburgh 13	Dr Harry M Little
Children s Service Center of Wyoming Valley 335 South Franklin Street Wilkes Barre Pa.	Dr J Franklin Robinson

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

Examining and certifying boards in 19 specialties have been approved by the Council on Medical Education and Hospitals of the American Medical Association The American Board of Ophthalmology, the first of the examining boards in the specialties, was organized in 1917 Four additional boards were organized by 1933 In 1934, the Council formulated minimal standards governing specialty boards The boards then in existence as well as boards formed in later years were subsequently approved as meeting these requirements All boards at present functioning have been approved by the Council and the Advisory Board for Medical Specialties

Two boards certify candidates in subspecialties The American Board of Internal Medicine certifies in allergy, cardiovascular disease, gastroenterology, and pulmonary diseases and the American Board of Pediatrics certifies in allergy Certification in the major field is a prerequisite for certification in these subspecialities

The Board of Thoracic Surgery is organized as an affiliate board to the American Board of Surgery, with prior certification in surgery a requirement for the certificate in thoracic surgery

Five boards confer certificates in special divisions of their specialty The American Board of Obstetrics and Gynecology will issue single certifications in gynecology or obstetrics only Otolaryngology grants a limited certificate in endoscopy Pathology issues certificates in pathologic anatomy, clinical pathology, a combination of these two fields, pathologic anatomy and clinical microbiology, clinical bacteriology, and clinical microbiology and clinical chemistry The Board in Psychiatry and Neurology confers separate certificates in psychiatry and in neurology or a combined certificate for those qualified in both fields This board also issues supplementary certificates in psychiatry and in neurology Radiology issues certificates in radiology, roentgenology, diagnostic roentgenology, therapeutic radiology and radium therapy

Each of the American boards has published a booklet containing a list of its officers and a brief statement of its organization, purposes and qualifications for eligibility for certification The current data pertaining to each board and the names of the officers of each board are reproduced in the following pages There is also included in this section specific statements from each board pertaining to allowances of credit for service in the armed forces during the present emergency A resume of medical education and national defense was published in the Educational Number of THE JOURNAL [1]

A list of the approved specialty boards, the year of their activation, and the number of certificates awarded prior to July 1, 1950, and the number of candidates certified to June 30, 1951, respectively, appear in Table 1 Figures are also given in these two groups showing the numbers certified in the subspecialties and finally the available figures pertaining to special certification by the boards in obstetrics and gynecology, otolaryngology, pathology, psychiatry and neurology and radiology

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[1] J A M A 147 132 134 (Sept 8) 1951.

TABLE 1 —*Approved Examining Boards in Medical Specialties*

Key No	Name of Board	Year of Activation	Total Certificates Awarded to July 1, 1950	Total Certificates Awarded to June 30 1951
1	American Board of Pediatrics	1933	3,305	3 681
2	American Board of Psychiatry and Neurology	1934	3 628	4,048
3	American Board of Orthopedic Surgery	1934	1,537	1 [illegible]
4	American Board of Dermatology and Syphilology	1932	1,260	1 477
5	American Board of Radiology	1934	3,209	3,707
6	American Board of Urology	1935	1 446	1,577
7	American Board of Obstetrics and Gynecology	1930	3,136	3,384
8.	American Board of Internal Medicine	1936	6,316	6,901
9	American Board of Pathology	1936	1 790	2,079
10	American Board of Ophthalmology	1917	3 042	3,343
11	American Board of Otolaryngology	1924	4 454	4,657
12	American Board of Surgery	1937	4,317	4,890
13	American Board of Anesthesiology	1937	653	790
14	American Board of Plastic Surgery	1937	214	237
15	American Board of Neurological Surgery	1940	328	370
16	American Board of Physical Medicine and Rehabilitation	1947	140	140
17	American Board of Preventive Medicine and Public Health	1948	780	1 734
18	American Board of Proctology	1949	44	53
19	Board of Thoracic Surgery (An Affiliate of the American Board of Surgery)	1948	256*	290
	Totals		39,894	44,878
	Certification in Subspecialties			
	American Board of Internal Medicine			
	Allergy		129	153
	Cardiovascular Disease		417	468
	Gastroenterology		249	250
	Pulmonary Disease		194	203
	Totals		1 019	1 063
	American Board of Pediatrics			
	Allergy		42	48
	American Board of Surgery			
	Proctology		81†	81†
	Totals		1 142	1 192
	Special Certification			
	American Board of Obstetrics and Gynecology			
	Gynecology			2
	American Board of Otolaryngology			
	Endoscopy		3	3
	American Board of Pathology			
	Pathologic Anatomy		25‡	226
	Clinical Pathology		100‡	132
	Pathologic Anatomy and Clinical Pathology		24‡	61
	Pathologic Anatomy and Clinical Microbiology			1
	Clinical Microbiology and Clinical Chemistry			1
	Clinical Bacteriology		1‡	2
	Totals		150	423
	American Board of Psychiatry and Neurology			
	Psychiatry		2 480	2,866
	Neurology		244	274
	Psychiatry and Neurology		904	905
	Supplementary Psychiatry			61
	Supplementary Neurology			41
	Totals		3,628	4 048
	American Board of Radiology			
	Radiology		351ᶜ	835
	Roentgenology		101ᶜ	138
	Diagnostic Roentgenology		80ᶜ	93
	Therapeutic Radiology		14ᶜ	13
	Radium Therapy		1	1
	Totals		547	1 080
	Totals		4,325	5,561

* Included in totals for American Board of Surgery
† Independent board established in 1949
‡ Certificates issued since July 1 1949
§ *Previous diplomates* Not included in totals
ᶜ Certificates issued since July 1 1948

On July 1, 1950, there were 39,804 physicians who had been certified by the 19 boards in operation, 5,074 were certified from July 1, 1950, to June 30, 1951 Up to this latter date a total of 44,878 physicians had been certified

In the subspecialties, by July 1, 1950, 1,142 certificates had been awarded An additional 50 have been awarded during the past year, bringing the total certificates issued in the subspecialties to 1,192 on June 30, 1951

Prior to July 1, 1950, there were 4,528 special certificates issued by the five boards mentioned An additional 1,033 were issued in the year ending June 30, 1951 The total special certificates awarded to date numbers 5,561

Table 2 records the number of specialists certified by the American boards each year during the past 12 years and the cumulative totals In this period 44,878 certificates were issued The figures represent the total number of certificates issued and do not represent the number of living specialists

The fifth edition of the "Directory of Medical Specialists" compiled by the Advisory Board for Medical Specialties, published in 1951, includes biographic data pertaining to the educational background of each of the living specialists, including those retired from practice, certified by an American board

TABLE 2—*Annual Specialty Board Certification 1940 1951*

Year (Ended March)	Number of Boards in Existence	Number Certified	Cumulated Totals
1940	14		15,853
1941	15	2 085	17 938
1942	15	1 756	19,694
1943	15	2,172	21,866
1944	15	1,578	23 444
1945	15	1,308	24 752
1946	15	1,320	26 072
1947	1	2 424	28 496
1948	16	3,002	31 498
1949 (June 30)	19*	4,479	35,977
1950 (June 30)	19	3,827	39,804
1951 (June 30)	19	5 074	44 878

* One Board the American Board of Proctology did not certify any candidates during this period

CREDIT FOR MILITARY SERVICE

At the suggestion of the Joint Committee on Medical Education in Time of National Emergency, the Advisory Board for Medical Specialties has recently conducted a survey to determine the amount of credit for service in the armed forces during the present emergency that would be given toward specialty board certification The inquiry addressed to the boards contained the following questions

> Will your specialty board give preference to those candidates wishing to be examined before going overseas or entering military service?
>
> How much, if any, credit toward your training and/or experience requirements will your board allow candidates while in military service?

In reply to the first question all boards answered in the affirmative The specialty boards have not lowered their requirements because of the military emergency, but all boards have indicated they will grant some credit for military service The specialty boards have indicated such allowances as follows

Anesthesiology—Credit for training will be given when it is in a formal approved program Other cases will be decided on an individual basis by the board

Dermatology and Syphilology—Automatic credit is allowed for one year toward the experience requirements plus credit for training in individual cases

Internal Medicine—One year of graduate training or one year in partial satisfaction of practice requirements Additional credit on the merits of each individual case

Neurological Surgery—Credit will be allowed toward training requirement if candidate is assigned to neurologic surgery in a military hospital, also, credit will be allowed for practice requirement if assigned to neurologic surgery

Obstetrics and Gynecology—Six months to three years depending on assignment For post-training practice credit, full time credit will be given as substitute Physicians called to active military service may make arrangements to take the examinations of the board at their place of duty

Ophthalmology—No stated credit Each case is decided according to the time the candidate has spent assigned to a military hospital in ophthalmology and on other factors

Orthopedic Surgery—One year of practice credit and one year of residency credit The same year cannot be credited for both residency and practice credit

Otolaryngology—Credit is given but each case is determined on its own merits

Pathology—Allows liberal credit toward training when assigned to department of pathology but candidates must first have had a minimum of one year residency in an approved civilian department of pathology

Pediatrics—One year of credit, regardless of assignment, towards two year practice requirement

Physical Medicine and Rehabilitation—Maximum of one year credit in related field, full credit if in the specialty

Plastic Surgery—Credit given on individual basis, considered on candidate's merits

Preventive Medicine and Public Health—Full credit if service is in the specialty A maximum of six months' credit for general military duties

Proctology—One year in fulfillment of either general surgical or proctologic requirements

Psychiatry and Neurology—Credit will be granted for military duty in the present emergency under certain conditions This policy relates to active duty since July 1, 1950 One year of training credit will be granted for one year spent in full time psychiatric and/or neurological duties Additional training credit will be granted for that amount of time spent in approved training programs Experience credit will be granted for any remaining time spent in full time psychiatric and/or neurological assignments Double credit will not be granted for any single period of time

Radiology—One year if assignment is in radiology

Surgery—Credit is allowed but each case is decided on its merits

Thoracic Surgery—Special consideration will be given individuals who have had special training in thoracic surgery during their period of military service Since this board operates as an affiliate of the American Board of Surgery, credit will have already been granted them by the latter board Examinations will be made available at regular intervals to members of the armed forces who are out of the country

Urology —No credit for training but credit for one year of practice requirement if training was complete when entering service

Medical Officer's Professional Training Record —The Surgeons General of the armed services have distributed a booklet prepared with the assistance of the Council and the Advisory Board for Medical Specialties which is designed to help prospective candidates for certification to maintain an accurate account of work done in the military service This record will constitute part of the credentials to be submitted to the board on application for certification The booklet has been printed by the Office of the Secretary of Defense and is distributed by the offices of the Surgeons General to the personnel of their department It is highly important that prospective applicants obtain a copy of the "Medical Officer's Professional Training Record" and that they submit their credentials for evaluation by the respective specialty board

AMERICAN BOARD OF ANESTHESIOLOGY

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CERTIFICATION

1 *Method of Making Application* —Application for certification may be made after a physician has completed one year of approved training *Application must be made to the secretary* on a form prescribed by the board, procured only on written request of the applicant and must be filed at least six months prior to the date of examination

The secretary cannot make any *eligibility rulings* These are made only by the entire board on recommendation of the appropriate committees after reviewing the candidate s formal application

2 *Requirements*

A *Each applicant before he shall become eligible for certification in anesthesiology, must*

1 Have graduated from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association, and have completed an internship of not less than one year in a hospital approved by the same Council, or its equivalent

2 Establish in a manner satisfactory to the board that

(*a*) He is a physician duly licensed by law to practice medicine

(*b*) He is of high ethical and professional standing

(*c*) He has received adequate special training in anesthesiology

3 Submit proof to the board that he has limited his practice to anesthesiology as a specialty for five calendar years of which at least two have been in formal clinical training approved by the board, and that he intends to continue to limit his practice to anesthesiology

4 Be a member in good standing in the American Medical Association, the state and local county medical society or comparable national medical society approved by this board He must be a member in good standing of the American Society of Anesthesiologists, Inc

5 Prove to the satisfaction of the board by such written, survey, oral and practical examinations as the board may prescribe that he is qualified to practice anesthesiology, and

6 Personally prepare such case history abstracts of personally conducted procedures pertaining to anesthesiology as the board may specify

B Each applicant shall be classified for the purpose of examination and shall be examined in such a manner and under such rules as the board may prescribe

3 *Conduct of Examinations*

A Written Examination Eligible applicants may take this examination on completion of two years of clinical training approved by the board Written examinations are held annually in approximately twelve locations throughout the United States on the third Friday in July Written examinations are of the *multiple choice type covering the following subjects* anatomy, chemistry and physics, pharmacology, pathology and physiology A passing grade, as determined by the board is required

B Survey Examination Started in 1949 this examination is conducted by one or more diplomates of the board who visit the applicant in his own locality to observe him in the practice of anesthesiology The examiner may interview other individuals in the community to determine whether the candidate is of high ethical and professional standing This examination is conducted on completion of four years limited to anesthesiology (including two years of approved clinical training)

C *Oral Examination* On completion of a favorable survey examination and five years limitation of practice to anesthesiology an applicant is eligible to appear for oral examination Examinations are conducted semi annually, in April and October Examiners consist of directors of the board plus diplomates who assist as associate examiners Oral examinations cover all phases of anesthesiology as do the written examinations, emphasis, however, is placed on clinical application

D Practical Examination At the discretion of the board practical demonstrations may be required of the management of the candidate's clinical practice in his local surroundings This may include inspection of clinical records, reports of departmental activities, library facilities, available apparatus and demonstrations of application of anesthetic agents, methods and all technics included in anesthesiology The candidate will also be appraised as to whether he is of high ethical and moral standing in his community

Applicants are entitled to *three consecutive opportunities* at *yearly intervals* to satisfactorily complete either the written or oral examination This three year period begins on the date an applicant is first declared eligible for the written or oral examination Applicants who fail to exercise the privilege of examination and/or who fail to pass any part of the examination three times will be required to file a new application, pay a new application fee, and submit to both *written and oral* examination

A fee of $15 00 will be charged for each reexamination for candidates who file application January 1, 1950 or later *The* board may, however, at its discretion *deny* a candidate the privilege of reexamination

The board reserves the right to limit the number of candidates to be admitted to any examination

FEE

The fee shall be $125 At least $50 shall be paid on filing the application, of which sum $35 shall be returned if the candidate is not accepted for examination The remainder ($75) shall be paid before taking the examination

The board is a nonprofit organization The fees for examination and certification have been computed on a basis of cost of maintaining an administrative office and conducting examinations The board reserves the right to increase the fee when necessary

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

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PURPOSES

The board was established primarily to determine the competence of physicians who specialize in dermatology and syphilology It has therefore established minimum standards of education and training, examines applicants and certifies properly qualified specialists in this field, prepares lists of those qualified and arranges for the publication of such lists Because of its interest also in the fulfillment of these standards, the board has a keen interest in the development of adequate training facilities, investigates institutions and individuals planning to train specialists, and lends its aid to the approval of those institutions and individuals offering adequate training in the specialty The board, in addition, will always be glad to advise physicians desiring to enter this special field of medicine

The board assumes the responsibility of determining the standards of knowledge to be acquired, but upon the candidate rests the responsibility of acquiring the knowledge to fulfil these standards

REQUIREMENTS FOR ELIGIBILITY FOR EXAMINATON

I GENERAL REQUIREMENTS

1 High ethical and professional standing

2 Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association The credentials of graduates of foreign schools must be approved by the National Board of Medical Examiners The status of the foreign medical school at the time of graduation may be determined by the Council on Medical Education and Hospitals of the American Medical Association Failing this each case will be decided on its own merits

3 Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council During three years of the second World War internships of nine months only were the rule These were voted to fulfil the internship requirement However, all internships completed on July 1 1947 or thereafter must be of twelve months duration or longer

4 A state license to practice medicine issued by endorsement of the certificate of the National Board of Medical Examiners or following examination

5 Membership in the American Medical Association or membership in a similar society recognized as having the same purpose as the American Medical Association

6 Citizenship in the United States or citizenship—meaning native citizens—in Canada or Cuba

II SPECIAL REQUIREMENTS

A period of study, after the internship of not less than three years Up to one month in each of the three years may be spent as a vacation but the exact time is a matter for the chief of service to decide Vacations may not be postponed from one year to another Candidates will not be eligible for examination until three full years have elapsed since the beginning of training This training may be obtained as resident, fellow or graduate student in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology This period of specialized training shall include

(*a*) At least one calendar year in an institution approved for three year training (less one month for vacation)

(*b*) Graduate training in the basic medical sciences which are necessary for the proper understanding and treatment of the diseases involved in this specialty

Instruction in the following fundamental subjects as related to the skin is deemed advisable by the board embryology histology chemistry, physiology, bacteriology, mycology, parasitology, pathology immunology serology pharmacology and materia medica, and physics of physical therapy

(*c*) Carefully supervised clinical and laboratory experience in the specialty

(*d*) Annual examinations or other appraisal by the chief of service in the clinical, laboratory and public health aspects of dermatology and syphilology

PRECEPTORSHIP TRAINING

Candidates may spend up to two years of theor training under the direction of a diplomate of the board, who has also been approved as a preceptor by the board Not more than one half of each training day may be spent in the office of the preceptor while during the other half day, supervised work should be performed in an approved institution The program which the student follows must conform to a schedule which an approved preceptor files with the board The preceptor and the chief of service of the institution which the candidate attends are jointly responsible for the training received by the student Preceptorship training may be taken during any two of the years of training Time spent with an instructor who has not been approved by the board may count only as experience and not as training A list of approved preceptors is available in the office of the secretary

To qualify as an approved preceptor, a dermatologist must be a diplomate for at least five years, be a recognized teacher, be an active member or professor emeritus of the dermatologic staff of an approved institution and be recommended as suitable by the chief of staff of the institution He must further submit an adequate program of instruction with provision for supervision of both office and hospital work

PRELIMINARY REGISTRATION

All students beginning their graduate training should file a preliminary registration form with the secretary A standard form will be sent on request No fee is required Any deficiencies in credentials would be detected early in the training period and any mistakes in the program could be corrected

REGISTRATION FOR EXAMINATION

In order that the committee on requirements may appraise carefully the qualifications of candidates, application must be made on a special blank, which may be obtained from the secretary No application will be considered unless made on the regular application blank Applications should be filed early in order to obtain full advantage of the sets of histopathologic slides which are available through the Army Medical Museum in Washington The completed application blank should be sent several months before the date of examination, to the secretary of the board together with the required reprints photographs and a *registration* fee of $25 which will not be refunded under any circumstances No application will be considered until this fee is received An *examination* fee of $75 is payable when the candidate is notified that his application is acceptable to the board The fee of $100 has been carefully computed and is used entirely for administrative purposes Examiners for the board do not receive any compensation except for actual expenses connected with holding the examinations

Make checks payable to American Board of Dermatology and Syphilology Inc

EXAMINATIONS

All applicants classified are required to take and pass a written examination before they are eligible for the oral test The written examination on clinical, basic science and laboratory subjects will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination

The present policy of the board is to test the knowledge of a candidate by means of the so-called multiple choice written examination in place of the essay type examination which was formerly in vogue

All applicants are also required to pass an oral, clinical and laboratory examination This examination will be conducted in a clinic, hospital ward or other suitable location where clinical dermatology will be discussed with each candidate, as well as various subjects related to the skin such as histopathology, mycology, allergy and physics of physical therapy The board reserves the right to add to this list other subjects within the field of dermatology and syphilology

A candidate for a certificate may take his examination the next time it is given after he has completed three full years of training in the specialty, provided he makes application before the quota for that session is filled, this provision does not affect the regulations about the issuance of the certificate (See Certificates)

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty The board will try especially to ascertain the breadth of his knowledge in the basic, as well as the clinical aspects of cutaneous medicine, to test his familiarity with the recent literature of dermatology and syphilology and to ascertain his general qualifications as a specialist in this branch of medicine

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions regarding further training for the purpose of overcoming deficiencies in the applicant's knowledge of this specialty

Candidates who have signified their intention of taking the examination and who fail to appear at the scheduled time or who attempt to cancel their appointment after the sending of the final notice, shall forfeit the fee for the examination

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee

The oral examination has been held twice during each of the last three years From present indications the number of students has decreased sufficiently so that only one examination each year may be given

REEXAMINATIONS

If the candidate fails or is conditioned in an examination he will be automatically admitted to a second examination and must give at least sixty days' written notice of his intention to appear for reexamination His acceptance for a particular examination is dependent on the number of candidates already on the roster If a candidate who has failed or has been conditioned does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $75 before reexamination

A candidate who has failed twice must file a new application and pay an additional fee of $75

CERTIFICATES

A certificate will not be issued until the successful candidate has completed at least five years of dermatologic training and experience The granting of this certificate by the board indicates that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board

A certificate granted by this board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice dermatology or syphilology The board does not intend to limit or interfere with the professional activity of any duly licensed physician Its aim is to improve the standards of practice of dermatology and syphilology by encouraging improvement in the opportunities for and quality of training for specialists in this field of medicine, and to certify as specialists those who voluntarily comply with the requirements of the board

Certificates will be issued only to physicians in the United States and its possessions, in Canada and in Cuba

ADVERTISING

It is not considered good form for a diplomate to advertise to the lay public the board's recognition of his training and ability He should not use commercial methods or avenues It is proper to include a statement or phrase such as "Diplomate of the American Board of Dermatology and Syphilology" in sending out announcement cards when opening an office or in inserts after the author's name in a medical publication when the association with a hospital, medical school, or medical society is also mentioned If the diplomate is in doubt, it would be well to consult the board before placing his good name in jeopardy

CREDIT FOR MILITARY SERVICE

1 All students in training who had served in the Army, the Navy, or the Public Health Service should complete a supplementary application form, obtainable from the secretary, in order to have evaluated the credits to which they are entitled Since the amount of credit to be allowed must be agreed to by various members of a committee, and since these members live in different, often widely separated cities, several months are usually required before a decision can be rendered The student is then sent a written report

2 Full time dermatologic military service may be credited, at the discretion of the board, for part or in exceptional cases all of two years of the three required years of *training* But at least one of the three years' required training to include instruction in the fundamental subjects deemed essential for an adequate dermatologic education, must be spent in one of the institutions approved for a three year training program by the board and by the Council on Medical Education and Hospitals of the American Medical Association

3 The board strongly urges that the candidate supplement his military experiences by a further period of systematic and supervised dermatologic training before the examination.

4 A credit of one year as *experience* has already been voted by the board for one year of any medical service with the armed forces Thus a former medical officer who passes the examination at the end of three years of training will receive his certificate one year later instead of at the completion of a total of five years' training and experience Dermatologic work while in the armed forces not credited as training, may satisfy part or all of the remaining year of required dermatologic experience

INSTRUCTIONS TO APPLICANTS

Fill out application blank in detail

Enclose fee of $25 Make checks payable to the American Board of Dermatology and Syphilology

Include photographs autographed across the front as directed on application blank

Enclose reprint of each published paper, if possible

Send completed applications and above items to the secretary

Please indicate under No 13 on the application blank as complete data as possible about your training in dermatology and syphilology Indicate the month and year, if possible, or at least the number of months of the various parts of your training and also whether full time or part time If part time, indicate whether one half day, six days a week, or three days a week, and so on If dispensary service is considered as part of the training, please indicate details here as well as under No 14

In No 16 indicate clearly when you began to limit your practice to dermatology and syphilology

If your training and your practice overlap, please explain under No 19

PUBLICATIONS OF THE BOARD

1 Booklet of Information

2 Opportunities for graduate and postgraduate students in dermatology and syphilology, containing a list of loci where instruction may be obtained, and details about these places. A check or money order for $1 should accompany request for a copy

3 Syllabus of Graduate Training
- (*a*) To inform the student physician, intending to specialize, of the field to be covered in his preparation and the methods by which his preparation can be accomplished
- (*b*) To aid the medical schools and the dermatologic departments of medical schools and hospitals by outlining the scope of teaching deemed advisable for specialization in dermatology and syphilology

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RESPONSIBILITES

The major object of the board is to pass judgment on the competence of internists who desire certification not to determine who shall or shall not practice internal medicine as a specialty

The American Board of Internal Medicine is not concerned with any mechanism which gains special privileges or specific recognition for those physicians who have been certified in internal medicine It has never been the intent of the board to define requirements for membership on the staffs of hospitals

The board endorses completely the stand of the American Board of Surgery which 'specifically disclaims interest in or recognition of differential emoluments that may be based on certification "

REQUIREMENTS FOR ADMISSION TO EXAMINATION AND CERTIFICATION

Each applicant for certification by this board must satisfy the qualifications listed below (I) General Qualifications A B C D (II) Professional Qualifications A B C D For exceptions to the requirements C and D under Professional Qualification see paragraph G

I General Qualifications

A All candidates must be citizens of the United States or Canada

B All candidates must present evidence of satisfactory moral and ethical standing in the medical profession

C All candidates must be active members in good standing in their county and state medical societies in their state of legal residence Under unusual and exceptional circumstances the board reserves the privilege of modifying this requirement. (This ruling shall not apply to commissionad officers of the United States regular Army or Navy or Public Health Service or to full time staff members [physicians] of the Veterans Administration who are otherwise Service Fellows of the American Medical Association)

D Canadian citizens must be active members of the Canadian Medical Association before admission to examination

II Professional Qualifications

A Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association at the date of graduation

B Satisfactory completion of an approved internship of not less than twelve months [1]

C Residency or fellowship approved by the Council on Medical Education and Hospitals of the American Medical Association in internal medicine according to the following plan (Plan A) or one of the alternate plans described under paragraph D

Plan A A residency or fellowship in internal medicine for a period of not less than three years in a hospital or other institution approved by the Council on Medical Education and Hospitals of the American Medical Association for residency or fellowship in internal medicine In such instances in which a resident's nominal status differs from that of the other hospital residents, he must furnish the board with certification by the chief of the medical service and the medical director of the hospital that he actually performed the full duties of a resident as a bona fide member of the residency program In addition, two years of practice of clinical internal medicine will be required The board will accept the following equivalents as satisfying one year only of the three years of residency or fellowship to which this paragraph refers (Two years must be in the field of general internal medicine)

1 If twelve months of a two year approved internship in a hospital approved for residency training in internal medicine is limited to the medical service and medical specialties credit will be granted for a first year of assistant residency The remaining two years of residency training must be in the general field of internal medicine Certification by the chief of the medical service as to compliance with this requirement must accompany application

2 One year of approved residency in one of the medical specialties allergy, cardiovascular disease, gastroentero'ogy, hematology, pulmonary diseases, neurology, pediatrics, psychiatry, dermatology and syphilology

3 One year of approved residency in pathology

4 One year as a graduate student or as an instructor in an approved medical school on a full time basis in bacteriology, biochemistry, pathology, pharmacology, physiology or internal medicine

5 An advanced degree in the fundamental sciences

Note —Graduate training credit for the time involved will be allowed candidates who take and satisfactorily complete postgraduate courses in internal medicine or the basic medical sciences provided by accredited medical schools on a full time basis This ruling shall not apply to courses of less than three months' or more than twelve months' duration A certificate of creditable performance, based in part, at least, on a formal examination on completion of the course, will be required

Note.—Fellowship or research assignments not approved by the Council on Medical Education and Hospitals will require certification by the chief of service that such assignment was equivalent in graduate training opportunities and patient responsibilities to that of an approved residency in internal medicine or the subspecialties recognized by the board This certification must be presented before application is filed

D Alternate Training Plans The board firmly believes that the plan of intensive training prescribed above offers the best opportunity for a young physician to prepare himself to meet his responsibilities as a specialist in internal medicine It is recognized however that capable individuals may accomplish the same result in a longer period of time during which the training is less intensive The board realizes that a number of medical graduates cannot follow the shorter and more desirable plan either because suitable residencies are not available or, in some instances because of personal and economic reasons Accordingly the board has modified its previous regulations governing eligibility for admission to examination In doing so the board has not modified its standards of examination It has liberalized its eligibility requirements for admission to examination by accepting half time formal training and the practice of internal medicine under favorable circumstances as to professional and hospital contacts, in lieu of part of the full time requirements It is hoped that by this means exceptional individuals may acquire a knowledge of medicine and experience in its application sufficient to qualify for examination

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[1] During the period in which the 9-9-9 program was in effect an approved internship of nine months will satisfy the requirement of twelve months. A residency of nine months is considered as nine months only

The program previously described (Plan A), which consists of three years of formal training in an approved residency or its equivalent, following internship, and two additional years in the practice of internal medicine, is recommended by the board Variations in this program are now subject to the following regulations

1 In all instances one year of approved internship and one year of approved residency will be required, except as indicated under Plan G The graduate training credit of one year heretofore granted as a result of active duty as a commissioned officer in the armed forces during the period beginning Dec 7, 1941 and ending Jan 1, 1947 may not be applied in satisfaction of the one year of approved residency referred to in Plan D, E, or F unless the candidate s assignment is considered by the board to have been equivalent to an approved residency

2 Following one year of internship and two years of approved residency [2] the remaining requirements may be satisfied by

Plan B, that is, by two years of half time formal training followed by two years of practice limited to internal medicine, or by

Plan C, that is, by five years of practice limited to internal medicine

3 Following one year internship and one year of approved residency, the remaining requirements may be satisfied by

Plan D [3], that is, by four years of half time formal training followed by two years of practice limited to internal medicine or by

Plan E [3], that is, by two years of half time formal training followed by five years of practice limited to internal medicine, or by

Plan F, that is, by eight years of practice limited to internal medicine

4 In every instance at least two years of practice in internal medicine must be included, but in instances in which four years of practice are substituted for one year of residency, only one additional year of practice will be required, when more than eight years of practice are substituted for two years of residency an additional year of practice will not be required

5 Physicians who have practiced internal medicine for twelve years following an approved internship may qualify for the examinations without further training (Plan G)

Half time formal training under expanded plans B, D and E is defined as follows

1. Half-time [3] as an instructor in clinical medicine in a recognized medical school in the United States or Canada
2. Half-time [3] in a research fellowship sponsored by a recognized medical school in the United States or Canada
3. Half time [3] as a graduate student in an approved graduate medical school in the United States or Canada

E Practice Requirements A period of not less than two years of practice in the general field of clinical internal medicine or in the more specialized branches of medicine (See exceptions, Section D paragraph 4) This requirement may be satisfied by independent practice or in association with a recognized internist

NOTE —Although in general the board believes it desirable to complete the three years of formal training before satisfying the requirements of practice, a reversal of this order is acceptable

F Graduates of Foreign Schools At the present time neither the Council on Medical Education and Hospitals of the American Medical Association nor any other educational agency in the United States has the facilities to evaluate adequately the quality of foreign medical education This board must, therefore, evaluate the fundamental educational credentials and other qualifications of each individual candidate educated abroad who applies for admission to examination (Requirements for graduates of foreign schools may be obtained on request to the board—One West Main Street, Madison 3, Wis)

G Candidates Graduating Prior to 1937 The requirement of three years of graduate training will not apply to candidates graduating from approved medical schools in the United States and Canada in 1936 or previous thereto, provided such candidates have limited their work to the field of internal medicine for at least two years, and provided each candidate is recognized as an internist by his colleagues in his community

H "Preceptor Training' Preceptor type training is not recognized in satisfaction of any part of the three year requirement of formal graduate training

I The board will grant one year of graduate training credit, or one year in satisfaction of the requirements of practice, regardless of assignment, for active duty as a commissioned officer in the United States Army, Navy or Public health Service for one year or more, beginning on or subsequent to Dec 7, 1941 and terminating on or before Jan 1, 1947 Commissioned officers serving less than one year prior to Jan 1, 1947 may apply that interval as graduate training, or in partial satisfaction of the requirements of practice This ruling applies to those who served during World War II

Service credit, either graduate training or practice, beyond one year requires individual evaluation by the Credentials Committee During the present emergency and beginning June 1, 1950, the board will grant one year of graduate training credit or one year in practice satisfaction of the requirements of practice regardless of assignment for active duty in the armed forces

PRINCIPLES OF TRAINING

The American Board of Internal Medicine is interested in the fact that the candidate has embarked on a career of study voluntarily and has thereby expressed the desire to excel and to participate personally in the world's progress in medicine

Preparation must be based on years of continuous thoughtful study Therefore, in suggesting a program for those who wish advice, the board hopes to assist the candidates to avoid inferior and superficial programs which may lead to failure and disappointment in later years

The board believes that all internists should have a sound fundamental knowledge of anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology Such knowledge is essential to the continued progress of any internist The board anticipates that adequate training will be obtained in the basic sciences as applied to internal medicine during a formal three year residency program

The board wishes to emphasize that time and training are but a means to the end of acquiring a broad knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty The responsibility of acquiring the knowledge rests with the candidate The responsibility of maintaining the standards of knowledge required for certification rests with the board

APPLICATION

Candidates for examination must make their application on a prescribed form, which may be obtained from the office of the Executive Secretary Treasurer

The application must contain a record of the candidate s premedical and medical training as well as of internships, residencies, graduate study hospital or dispensary staff appointments, teaching positions, service in the armed forces, membership in medical societies medical papers published and the names of four well known internists to whom the board may write for professional and character reference

The application must be accompanied by one recent, signed photograph of the candidate mounted on the application, and the registration and examination fee of $40, which fee will cover both the written and oral examinations An additional fee of $10 will be required when the certificate is issued

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[2] For the second year of approved residency one of the equivalents described under C Professional Qualifications may be substituted

[3] Half time formal training is regarded as four hours per day for six days per week It is required that half time formal training be verified by the head of the department Verification must accompany application.

The requirements of graduate training and two years of practice in the field of internal medicine must be satisfactory before a candidate is eligible to apply for admission

METHOD OF EXAMINATION—WRITTEN AND ORAL

The examinations for certification by the board comprise two parts Part I is written, Part II is clinical and is an oral examination The written examination is held simultaneously in different sections of the United States and Canada Effective Jan 1, 1949, one written examination will be given each year This examination will be held on the third Monday in October This examination is divided into a morning and afternoon period for each of which three hours are allowed The questions are of the multiple choice type, framed in such a manner as the board elects and designed to test the applicant s knowledge of applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine, and his basic clinical acumen

Candidates must pass the written examination before admission to the oral examination will be authorized The oral examination is conducted under the direct supervision of the board It is held near the time and place of the annual meetings of the American Medical Association and the American College of Physicians The examination is conducted at the bedside of the patient Each candidate is assigned two or more patients and is expected to be sufficiently familiar with whatever problems present themselves to satisfy the board of his clinical expertness

Normally only two oral examinations are given each year The board may, however, schedule special oral examinations if necessary Announcement of all examinations will appear in the *Annals of Internal Medicine* and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION Applications cannot be accepted until the schedule is announced in the publication referred to, and cannot be accepted after the closing date as announced

REEXAMINATION—WRITTEN AND ORAL

1 Effective July 1, 1949, the board will waive restrictions on the number of written examinations authorized provided the candidate has satisfied the requirements hereinafter set forth in paragraph 4 The board may at its discretion deny reexamination in individual cases The interval between the first and second written examinations will be one year The interval between all subsequent written examinations will be two years A longer period may be required by the board A fee of $10 is required for each additional written examination

2 Effective July 1, 1949 the board will waive restrictions on the number of oral examinations authorized, provided the candidate has satisfied the requirements hereinafter set forth in paragraph 4 The board may at its discretion deny reexamination in individual cases The interval between the first and second oral examinations will be one year The interval between the second and third oral examinations will be not less than two years The interval between all subsequent oral examinations will not be less than three years A longer period may be required by the board A fee of $20 is required for each additional oral examination

3 This ruling does not make it mandatory for a candidate to repeat the examination within the specified time limit Candidate may elect a longer interval in the case of both the written and oral examinations

4 When applying for reexamination a candidate who has been unsuccessful in three written or three oral examinations will be required to present evidence that he has completed additional graduate training of at least three months in internal medicine in an approved medical school on a full time basis or its equivalent in approved resident or fellowship training since the last examination In individual cases the board may require a longer course Short courses of less than three months may not be applied in satisfaction of this requirement A new application for admission is required

The provisions of this section shall be effective retroactively Any candidate previously disqualified from further examination on the basis of having been unsuccessful in three examinations either written or oral may now apply for reexamination subject to the provisions of paragraphs 1 through 4 of this section

CANCELLATIONS

Effective July 1, 1949, any candidate who cancels his assignment for a written or an oral examination after the official cards of admission have been mailed, will be required to pay a special fee in the amount of $10 before a subsequent examination, unless his cancellation was due to a cause deemed adequate by the board to exempt him from such special fee The mailing date of the cards of admission will be approximately one month previous to the date of examination This provision becomes necessary because of the large number of cancellations after complete arrangements have been made, and the expense incident thereto

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by laws and shall be signed by the officers and members of the board and shall bear the official seal of the board

Certificates of the board will be issued to candidate who have satisfactorily completed the written and oral examinations and have been found qualified by the board to practice the specialty of internal medicine Specialty certification will be designated on the certificate, for those so certified

SUBSPECIALTY BOARDS

Allergy cardiovascular disease gastroenterology and pulmonary diseases are recognized specialties

Each subspecialty application is individually considered and acted on by the subspecialty board concerned The candidate is not eligible for examination until his application has been approved by the subspecialty board concerned and confirmed by this board

All candidates must pass the written and oral examinations in internal medicine before admission to examination in a specialty of medicine referred to The specialty examinations are oral only and may be taken at any regularly scheduled oral examination subsequent to the candidate s certification in general medicine Announcements of the oral examination will appear in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the *Annals of Internal Medicine*

Application forms will be forwarded on request to the office of the Executive Secretary-Treasurer and should be returned to his office when completed

INFORMATION ON CERTIFICATION IN ALLERGY BY THE AMERICAN BOARD OF INTERNAL MEDICINE

1 Two years, full time, in an approved allergy clinic and hospital (including training both in Allergy and Internal Medicine or Pediatrics) or

2 One year, full time, in an approved allergy clinic and hospital and two additional years of attendance at an allergy clinic and its activities, or

3 Five years, full attendance at an approved allergy clinic and its activities

Approval is granted solely by the Council on Medical Education and Hospitals of the American Medical Association

The Director or Chief of the Allergy Clinic must be certified in Allergy by the American Board of Internal Medicine or the American Board of Pediatrics Inc

INFORMATION ON CERTIFICATION IN CARDIOVASCULAR DISEASE BY THE AMERICAN BOARD OF INTERNAL MEDICINE

The applicant should be of good character and excellent standing in his community, as attested by letters from sponsors of known integrity The committee has disapproved applications from men whose training and achievements have seemed otherwise acceptable but who have been regarded by their colleagues as unethical or otherwise undesirable influences in their communities

The applicant should have reached a state of maturity, compatible with the acquisition of sufficient factual knowledge and experience to form a basis for sound judgment The committee believes that it is only unusual individuals who are sufficiently mature for this subspecialty before the age of thirty-five years or less than ten years after graduation from medical school

The candidate must have given clear evidence of his deep and constant interest in cardiovascular disease over a period of years The committee is particularly interested in recommending for examination those applicants whose records indicate that their interest in cardiovascular disease will probably *be sustained throughout life, and that their knowledge of the* subject will constantly grow Achievements in the field of research are regarded as evidence of such interest but publication of articles or prolonged training in research work is not considered essential Consideration will be given to the circumstances of each applicant's training and experience, those who have been in communities and institutions which offered excellent opportunities for contributions to the knowledge of cardiovascular disease will be expected to have made such contributions Consideration will be given to the difference in experience of those whose opportunities for research have been more limited

In most cases it is deemed essential that the candidate after thorough training in internal medicine shall have received at least one full year of postgraduate education in cardiovascular disease, *preferably under the guidance of a person known to be* experienced and sound

Every candidate admitted to the certifying examinations in cardiovascular disease will be expected to possess specialized knowledge of the kind indicated below This list is by no means complete it is intended to indicate the nature rather than the extent, of the knowledge every applicant should have In terms of its scope it should be regarded as the minimum, not the maximum

Full and accurate knowledge of the anatomy of the normal and diseased heart including its relationships to the external chest and to the other mediastinal structures A comprehensive anatomical knowledge of all important blood vessels including their aberrant locations

A thorough knowledge of the normal and pathological physiology of the heart and peripheral circulation is considered by the committee to be of fundamental importance

Detailed knowledge of the diagnostic signs which permit the recognition of all important diseases of the heart and blood vessels such as arteriosclerosis, arteriosclerotic heart disease, syphilitic heart disease, rheumatic heart disease, constrictive pericarditis auricular and ventricular septal defects, coronary thrombosis with myocardial infarction, thromboangitis obliterans, Raynaud s syndrome, coarctation of the aorta, aneurysm, patent ductus arteriosus, periarteritis nodosa and lymphedema

Familiarity with the special methods used in the study of diseases of the heart and blood vessels In the case of the heart, these include such technics as electrocardiography and roentgenography, in the case of vascular diseases, such technics as the use of the oscillometer and thermocouple, arteriography, and venography, reflex vasodilatation, the cold pressor test, color changes with elevation, dependency and temperature

Accurate knowledge of the pathologic changes associated with the more important diseases of the heart and blood vessels, sufficient to enab'e the candidate correctly to evaluate the pathologic condition *from gross specimens of microscopic* sections

Fairly extensive and detailed knowledge of the pharmacology relating to heart and blood vessels This must include full knowledge of the important relationship of the autonomic nervous system both to the heart and to the peripheral vessels, and the effects of stimulation or paralysis of the various parts of the autonomic system by drugs or by surgical methods The candidate should be intimately familiar with the use and effects of such important drugs as digitalis, quinidine, heparin, papaverine, epinephrine, dicumarol, penicillin, diuretics and sedatives

Every candidate should have a sound understanding of the indications for conservative therapy, as well as for surgical procedures, in cardiac and peripheral vascular diseases (patency of the ductus arteriosus, arteriovenous anastomoses, constrictive pericarditis, scalenus anticus syndrome)

INFORMATION ON CERTIFICATION IN GASTROENTEROLOGY BY THE AMERICAN BOARD OF INTERNAL MEDICINE

A Professional Standing

The candidate must have at least two letters from recognized internists or gastroenterologists, which must attest to the candidate's professional qualifications and ethical standing, whether he is specializing in gastroenterology and if not entirely, giving an opinion as to approximately how much of his work is devoted to it

B Education

1 The candidate must admit proof of adequately supervised training in the recognized gastroenterologic procedures, including gastric and hepatobiliary function tests, proctosigmoidoscopy and gastrointestinal roentgenology (film interpretation)

2 The candidate must present evidence of fulfilment of one of the following requirements

(*a*) Formal graduate course in gastroenterology, full time for at lease eight months in a recognized institution

(*b*) Residency or fellowship for at least one year in gastroenterology under tutelage of a recognized specialist

(*c*) In the absence of (*a*) and (*b*), attendance and active participation in a ward service or in a gastrointestinal clinic, recognized in standing, for at least five years

3 If requirements (*a*) or (*b*) under the above heading have been met, only three years of (*c*) will be required

C Practice

At least 60 per cent of the candidate's work must have been devoted to gastroenterology for at least three years before application

INFORMATION ON CERTIFICATION IN PULMONARY DISEASES BY THE AMERICAN BOARD OF INTERNAL MEDICINE

I Candidates for certification in pulmonary diseases shall fulfil the requirements of the American Board of Internal Medicine as to

A General Qualifications

B Professional education

C Special training

II In Addition to the General Requirements of the American Board of Internal Medicine, candidates shall

A Have completed special training period in pulmonary diseases to include at least a year's work in a sanatorium or hosp tal *for tuberculosis and at least another year in the practice* of pulmonary diseases in such an institution or in association with an older man competent in this field

B Submit an application to the Advisory Board in this specialty, which must be approved by all of the members of this board

C Pass the written and oral examinations of the American Board of Internal Medicine

D Pass the oral and practical examination in pulmonary diseases

AMERICAN BOARD OF NEUROLOGICAL SURGERY

A W Adson, Chairman, Rochester, Minn
Francis C Grant, Vice Chairman, Philadelphia.
Percival Bailey, Ch cago
Howard A Brown, San Francisco
Leo M Davidoff, New York
Leonard T Furlow, St Louis
Eric Oldberg, Chicago
Bronson S Ray, New York
R Glen Spurling, Louisville
James C White, Boston
Harry Wilkins, Oklahoma City
William J German, Secretary-Treasurer, 789 Howard Avenue, New Haven 4, Conn

General Qualifications

1 Moral and ethical standing in the profession satisfactory to the board of directors

2 *It shall be discretionary* with the board to accept for examination candidates who have been in practice more than six years but whose formal training fails 'o meet the full requirements

3 Properly qualified candidates who are permanent residents in and citizens of other countries and are *legally qualified* to practice medicine there, and who have received their training in neurological surgery in the United States of America or Canada may apply for certification by the American Board of Neurological Surgery

PRELIMINARY PROFESSIONAL STANDING

1 Graduation from a medical school which is acceptable to the American Board of Neurological Surgery

2 Completion of a surgical internship of not less than one year in a hospital acceptable to the board, or its equivalent in the opinion of the board (A one year rotating internship does not satisfy this requirement)

SPECIAL TRAINING

A period of graduate study in a recognized graduate school of medicine of not less than three years beyond the year of general surgical training, or in an approved hospital or under a sponsorship acceptable to the American Board of Neurological Surgery for the training of neurological surgeons The training in clinical neurological surgery must be progressive and not obtained during repeated short periods in a number of institutions It is preferable that at least two years of this training be had in one institution, and the board will not ordinarily approve periods of training in clinical neurological surgery of less than one year

This period of special training shall be of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized Knowledge of these sciences as applied to practice of neurological surgery will be required in the examination The board will not credit periods of study limited to these basic sciences of longer than six months in fulfillment of this requirement of three years of special training

Training in diagnostic neurology should be obtained either in correlation with training in neurological surgery or independently The candidate will be required to pass an examination in this subject

An additional period of not less than two years in the practice of neurological surgery

The above represents only the minimum requirements of training for the practice of neurological surgery in the opinion of the board

APPLICATIONS

An application on the official application blank in such form as may be adopted from time to time by the Board of Directors, in order to be considered at any meeting, must be in the hands of the secretary treasurer of the board not less than sixty days before the date of such meeting

The secretary treasurer of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary-treasurer may deem desirable, after which he shall forward the application to the Committee on Credentials This committee shall consider the application and other information available and notify the secretary treasurer its recommendation whether or not the applicant is acceptable The certification of a candidate shall be approved by a majority of the members of the entire board at any meeting held for such certification

PAYMENT OF FEES

The fee for certification, with or without examination, shall be $100

The candidate for examination on filing his application shall accompany it with an application fee of $25 When notified by the secretary treasurer that he is eligible for examination he shall send the examination fee of $75 to the secretary treasurer at least two weeks before the date of the examination The application fee will be returned if the candidate is not accepted for examination

REEXAMINATION

A candidate who has failed in one examination is eligible for reexamination in the subject or subjects in which he failed within three years on payment of a reexamination fee of $25 A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

WALTER T DANNREUTHER President New York
JOSEPH L BAER, Vice President Chicago
WILLARD R COOKE, Vice President, Galveston, Texas
F BAYARD CARTER, Durham N C
ROBERT A KIMBROUGH JR , Philadelphia
DANIEL G MORTON, Los Angeles
LAWRENCE M RANDALL, Rochester, Minn
HERBERT E SCHMITZ, M D Chicago
ROBERT L FAULKNER, Secretary-Treasurer 2105 Adelbert Road 6, Cleveland

REQUIREMENTS

Each applicant before he may become eligible to receive the certificate of the board or other evidence of recognition

1 Must have had conferred on him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association

2 Must establish in a manner satisfactory to the Board of Directors that he is a physician duly licensed to practice medicine, and

(*a*) that he is of high ethical and professional standing

(*b*) that he has received at least minimal training bilaterally, i e , in both obstetrics and gynecology Training in one branch only is no longer sufficient for qualification The term minimal training as used here is at present defined as meaning at least one year of full time formal training, in the branch of either obstetrics or gynecology relegated to a minor role in a candidate s training program as related to his preference and plans for practice The required total of formal training is three years

(*c*) that physicians otherwise qualified, who were graduated before Jan 1, 1939 and whose required training was in obstetrics or gynecology alone, and who have confined their practice to obstetrics or gynecology for at least five years immediately prior to application be accepted for examination as candidates for certification in either obstetrics or gynecology In all other respects requirements for eligibility remain the same as for those physicians graduated since 1939 Bilateral training is required

3 Must make application for investigation of his credentials and a survey of his character

4 Must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so, except for possible military duties Candidates will be accepted only if, on application or by the time of their examination, they have been in practice limited to the specialty for a minimal period of at least two years following completion of their specialty training This change in requirements permits a qualified candidate to make his application in the second year of his post training practice period The sole exception to the two year limitation is practice for the Frontier Nursing Service, Inc , of Kentucky

This board will not accept applicants for examination who are not full citizens of the United States or of Canada, though they be residents of either country Foreign born applicants must have been certified by either the National Board of Medical Examiners or licensed to practice medicine in the United States or Canada by a state or provincial board of licensure Notarized statements, not original citizenship papers, must be furnished when the application is filed attesting to the fact of full citizenship in the United States or Canada if the applicant is foreign born Further, there will be required a probationary period of at least three years from the date of licensure in the practice of medicine in these countries before such a candidate may be admitted to examination

Applicants who have been certified by one of the other American specialty examining boards will not be eligible for certification by this board until they have relinquished the certificate previously conferred (In making application to this board for certification, applicants, for some time back *have* agreed to revocation of their certification by this board if and when they apply for and receive certification by any other American board, except on special action to the contrary taken by the American Board of Obstetrics and Gynecology)

The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology, except by special ruling when this is related to active military duty

This board deprecates engagement in fields of practice other than that in which candidates profess to be specialists The board does not exclude from examination, however, obstetricians-gynecologists who practice abdominal surgery and urology in the female because of the correlation of these activities Breast surgery, hernia operations gallbladder surgery and appendectomies *per se* are general surgical conditions

Military service or any other similar patriotic service, such as work with Selective Service boards, have not been construed as nonlimitation of practice in violation of the board regulations Officers (Regulars or Reserves) certified by this board and on duty with 'Family Dependent Services" are expected to be permitted to limit their work to the specialty, as in civilian life, and not to be engaged regularly in general or other practice

The minimal requirements for all candidates will be uniform as follows

1 Completion of at least one year intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association This need not be a general rotating internship, although this latter is preferred

The board accepts the fifth or intern" medical school year required at some schools in lieu of the usual fifth or intern clinical training' year following graduation

2 A minimum of seven years of training and practice after the intern year, to include at least three years of residency training in obststrics gynecology in approved institutions, or adequate preceptorship training (See Section on Preceptorship Training) Following completion of acceptable training two years of post training practice limited to the specialty are required

This leaves two other years in the total of eight years following graduation During the early part of this period other training in branches, especially such as general abdominal surgery (see next paragraph), or in pathology, urology, internal medicine, or general practice is desirable and accredited on this total time period The last two years of such an eight year period must be in practice limited to the specialty (See paragraph 4 under Requirements)

The Council on Medical Education and Hospitals of the American Medical Association listed for the first time in 1950 (J A M A April 15 1950 pages 1216, 1204-1211) 149 inspected and approved one year residencies in general surgery as offering training in general surgery in preparation for residencies in surgical specialties ' Such residencies are recommended by this board as desirable additional preparation, particularly when they provide opportunities for training in abdominal surgery As noted above, such service may be included in the total minimal eight years required after graduation

Post-training practice period may include full time medical school or other positions within the specialty, actual practice within the specialty as an assistant, associate or independently

Periods of residency in obstetrics gynecology in excess of the required three years will not be accepted as a substitute for any part of the two required years of post training practice except in the cases of *men advancing from their* residency training into and planning to remain in full time teaching positions in medical schools and their affiliated hospitals

3 Basic science training should emphasize the relation of the basic sciences, anatomy, pathology, physiology, biochemistry and bacteriology, to the application of surgical principles which are fundamental in all branches of surgery More especially, for this specialty there should be training in infertility, endocrinology oncology, irradiation therapy, electrotherapy, psychosomatic medicine and other nonoperative methods of diagnosis and treatment In addition, the candidate must understand and be trained in the care of emergencies, shock, hemorrhage blood replacement *electrolyte and fluid* balance protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics, wound healing, and so on

Studies in the basic sciences may be integrated with the clinical work or may be given separately

SPECIAL CREDITS AND RULINGS

The board conformed with the general acceleration in programs in medical education in that it will accept a period of nine accelerated' months as an academic year in satisfying the requirement for each of three years of residency training Such allowances can be made only for services during the wartime period of the official 'accelerated program" and are not made for services before 1943 or after the discontinuance of this acceleration in 1946

No formal graduate courses are required If taken, credit will be limited to six months Fellowships will be evaluated individually for credits by the Credentials Committee

An applicant serving under military orders in an Army or a Navy hospital in an obstetrical gynecological service under supervision will be given the same credit as if he were working under a preceptor, if these departments are supervised by diplomates of this board or recognized obstetricians gynecologists. He may obtain *full residency credit if such hospital is officially* approved and listed for residency training *in this* specialty The Credentials Committee of the board will review and give consideration to each individual case Special request must be made for such credits

A blank log-book entitled 'Medical Officers Professional Training Record is obtainable from the offices of the Surgeons General *This Record should be carefully kept and attested while in military service*

APPLICATION AND FEES

Application must be made on a special blank which will be furnished by the secretary's office and must be forwarded with the other required credentials and the application fee to the secretary's office at least ninety days prior to the scheduled date of the Part I examinations

Candidates who have not had a minimum of three years' formal residency type of special training should utilize Preceptorship or Supplemental Training forms, obtainable from the office of the board, to submit in addition to the regular application form

The application fee is *$25 and is not returnable*

The examination fee is $100 and is payable when the candidate is notified of acceptance for examination This fee is not returnable after the candidate has been officially accepted by the Credentials Committee and notified to report for examination.

If the candidate fails the Part II examination on his original application he may exercise the privilege of one reexamination (see Examinations, Part II) but he will be required to pay a fee *of $25 for such reexamination on making request that his application be reopened for this purpose This ruling is* effective on *applications originally made* after June 1, 1949

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners and associate examiners serve as such without compensation other than actual expenses

Many prospective candidates write the secretary s office outlining in their letters their training qualifications and asking informally if they are eligible if this training has been *sufficient* and, if not, what is still lacking Any candidate should be able to make a fair estimate of his eligibility after studying these *requirements*

Individual officers and directors cannot and will not make any such estimates or rulings These are made only by the Credentials Committee after reviewing such requests made on a *special* form provided for this purpose and submitted to the *secretary for an* appraisal with the fee of $15 to cover clerical expenses *involved.*

This form is designated the "Application *for Appraisal of* Incomplete Training '

Personal interviews *cannot be granted by the secretary or other directors of the board* unless requested by the board

Appraisal of Training forms should not be filed if Application for Certification has already *been filed This is unnecessary* duplication

All candidates must comply with the board regulations in effect for the year in which the examination is taken, regardless of when the original application was filed

Applicants declared ineligible for admission to examination may request reopening of their applications within two years of the filing date without payment of an additional application fee When a candidate requests that his application be reopened, he must supply the board with information to justify such further consideration A request for the reopening of an application declared ineligible by reason of insufficient training nonlimitation of practice or similar items may not be approved in less than two years, although application may be made as specified above to avoid payment of an additional fee This approval time may be reduced under exceptional circumstances The request must have adequate supporting evidence of additional training and experience to warrant reconsideration Preceptorship or Supplemental Training blanks should be used for such reports and these will be supplied on request

After two ineligibility or postponement rulings on any candidate's application an entirely new application must be submitted (with or without fee, according to current requirements) in order to bring data down to date The essential feature of this should be evidence of additional training and experience

Applicants declared eligible but who fail to exercise the examination privilege within three years of the date of filing the application are required to file a new and current application and to pay a new application fee

Candidates should offer as sponsors or references two diplomates of this board with whom they are presently in contact, rather than men under whom they served as residents only It is required that sponsors be from the candidate s community and currently acquainted with the candidate and his ability in his practice of the specialty

On notice of acceptance for admission to examination, examination fee is due and also case records which should be shipped by the candidate to the secretary s office as soon as possible and not later than the date of the Part I written examination

The candidate should make immediate acknowledgment of his notice of acceptance, at which time he will notify the secretary s office approximately when to expect his case reports

EXAMINATIONS

Part I examinations are scheduled annually for early in February Grades cannot usually be mailed from the secretary s office until after April 1 following the examination Arrangements will be made for candidates to report in any convenient city where there may be a diplomate of this board to conduct or supervise the written examination which will be sent out from the board s office under sealed cover

Special arrangement will be made through senior officers for conducting the written portion of the Part I examination for men in military service Such candidates are requested to keep the secretary s office informed at all times of changes in their mailing addresses

All applicants accepted for examination will be required to obtain a passing grade in both the written examination and a review of case reports (Part I) before becoming eligible for the oral-clinical and pathology examinations (Part II) The passing grade for the written examination and case reports is 75 per cent A candidate whose grade in either or both falls below 75 per cent is conditioned

Reexamination for the removal of conditions in Part I may be taken after one year but within three years after the first failure without payment of an additional fee

Application for reexamination in Part I must be made by the candidate prior to November 1 of any year

Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year

Candidates appearing for reexamination under a new application after two previous failures will not be required if they have passed all or part of the Part I examinations on their first application to repeat such examination items already successfully cleared

PART I

Examination consists of

1 A comprehensive written examination conducted annually, including questions on both obstetrics and gynecology and related basic sciences The written examination will be limited to a maximum period of three hours

2 The filing as early as possible, and not later than the date of the written examination, of twenty five obstetrical and gynecological case reports, in condensed form (See Sections on Case Reports)

Grades on case reports submitted for review prior to the written examination will be announced simultaneously with those of the latter, candidates who take the written examination but fail to submit case reports on or before the date of the written examination cannot be given the grade on the latter until their case reports have been received and graded

PART II

The oral-clinical and pathology examinations given all candidates are conducted by the entire board and the associate examiners usually near the time and place of the annual meeting of one or more of the national societies represented on this board Advance announcements of examination dates and place will be made in medical journals throughout the country

Examination consists of

1 Oral examination before two to four examiners

An endeavor is made to adapt the details of the oral examination to each candidate s experience and practice The examination is particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the related basic sciences, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology

2 Pathology examination

The candidate is expected to identify and to discuss several obstetrical and gynecological pathologic specimens and sections

Examiners report orally on each candidate to the assembled board, after which the results of their investigations are considered jointly by the entire board and associate examiners After a general consideration of the details of the candidate s oral and pathology examinations, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board of directors

The final action of the board is based on the candidate s ethical and professional record, training and attainments, as well as on the results of his formal examination

When a candidate fails in Part II of the examination, he is not required to repeat Part I but is required to repeat Part II only One reexamination may be taken within three years of the original examination and first failure without formal reapplication papers Request for reopening of the candidate s original application must be filed with a reexamination fee of $25 (See Application and Fees) Application for reexamination in Part II must be made by the candidate prior to February 1 of any year Data regarding additional training or experience and medical school or hospital appointments acquired in the interim must be cited in the letter and verified on a Supplemental Training Form obtained from the office of the secretary of the board

The reexamination fee will be effective only on original applications filed subsequent to the date of this announcement namely, June 1 1949

The candidate may be allowed to reappear at the examination following the one failed by him The board may, at its discretion, deny the candidate the privilege of reexamination Requests for admission to reexamination must be accompanied by statements covering additional training, or opportunities for supervised clinical experience since the previous failure to justify such readmission

Failure to exercise the privilege of reexamination within three years entails the filing of a new application with the usual application and examination fees

After two failures in either Part I or Part II on the first application the candidate may reapply and be readmitted to examinations once only Exceptions to this ruling can be made only by action of the entire board of directors in annual session usually to be based on evidence of additional training and experience sufficient to warrant such action

CASE REPORTS

Case reports are to be sent by the candidate to the secretary as soon as possible after receiving notification of eligibility and not later than the date of the Part I written examination

Twenty-five important obstetrical and gynecological case reports, in condensed form, are required Five cases may concern major illnesses, not necessarily operative These reports must include a variety of material rather than a number of reports of one type Effective Jan 1, 1952 case reports from one residency's service shall not be more than five in number

Men holding full time medical school faculty appointments may submit half their case records from this full time, nonprivate practice, but post-training service (See Requirements.)

The candidate should prepare and maintain in his possession a carbon copy of his case records in case of possible loss in shipping

These reports are not to be copies verbatim from hospital records, but should be in condensed form

Evidence of adequate follow-up examination pertinent to each individual case must be submitted

The candidate should submit *separate verified index lists, in duplicate* for each individual hospital at which operations were performed All of these must be formally signed by the responsible hospital official (preferably the hospital superintendent), attesting in each instance that the candidate was the operator

In the upper left-hand corner of each index sheet there should appear

Candidate's Name, and Name and Address of Hospital

The data for each patient should be tabulated horizontally, reading thus

1 Sequence number of case report (1 to 25)
2 Whether patient was from the candidate's residency service or his own private or ward practice, as follows Res Serv " or "Own Practice *All records failing to have this information will not be considered acceptable*
3 Patient's name or identifying initials age, parity
4 Date of patient's admission and hospital admission number
5 Date of patient's operation
6 Date of patient's discharge
7 Dates of follow up examinations

At the foot of each index sheet should be placed the attested statement of the hospital official, referred to above This statement should read as follows

This is to certify that the above listed case reports have been verified by me from the records of this Hospital and these patients operated upon in this institution by Dr ——————, that the admission number and dates specified are correct This is further to certify that the reports given the following sequence numbers (———— to ———— inclusive) were from the residency service of the aforementioned physician and the reports given the following sequence numbers (——— to ——— inclusive) were from his own practice (ward or private) in this Hospital and that in all instances he was the chief operator

Signature

Official Title

Date

Each case report should be typewritten on standard size paper, 8½ x 11 inches, and these reports then assembled in sequence Covers should not be used for separats reports, as this increases their bulk unduly Reports should be bound loosely together in a light outside cover not larger than 10 x 12 inches, so that they may be opened and held like a book The following items should be observed

I Each case report should be headed by identifying information corresponding with that of the index lists, including sequence number, designation as a "Residency' or 'Own Practice" case, and so on

II The report of the case should begin with

1 Preoperative diagnosis
2 Postoperative diagnosis (based on findings)

III The report should be in condensed form, not reported in detail Follow up findings of not less than six (6) months are *essential* Omissions of follow-up examinations must be explained and justified

IV Obstetrical reports which do not include essential pelvic measurements and note of methods used, will be considered incomplete

V Critical summary or analysis of each report with critical deductions derived from correctness or incorrectness of candidate's procedures and from final results must be a final part of each report Lacking such summary, *reports will be considered incomplete and will not be graded*

GRADUATE TRAINING RESIDENCIES

This board, through the Council on Medical Education and Hospitals of the *American Medical Association*, has approved institutions providing acceptable residencies in obstetrics and gynecology

The American Board of Obstetrics and Gynecology has established the following requirements for its approval of a residency in a hospital department or service

1 It is most desirable that the Chief of the Active Visiting Staff of the Department be certified by the Board, in the interests of the proper teaching of the specialty of obstetrics and gynecology In lieu of such certification the Board will accept individuals of recognized high professional standing in the specialty At least one additional member of the staff shall be similarly qualified

2 Exceptions to the foregoing, in respect to the certified status of Chiefs of Service and others as outlined above, can be made by assent of the Committee on Residency Training for adequate and justifiable reasons As examples of the latter, the degree of F.A C S in obstetrics gynecology may be accepted in lieu of one of the two required certifications if the general reputation of the person concerned is known to the Committee as national or sectional in scope, or a professonal rank without certification might be acceptable

3 In instances where the services of obstetrics gynecology are not combined but are separate in any given hospital, the Chief of each such service seeking approval and at least one of his subordinates must be certified or otherwise qualified as out lined above

If obstetrics and gynecology are not combined in one department, approval can be granted only if arrangements are made for some degree of rotation of residents between both services, provided both services are separately approved

4 If gynecology is classified in the given hospital as a subdivision or subservice of general surgery, approval *cannot* be granted for residency training in gynecology Exceptions have been made if the subdivision of gynecology is headed and staffed by a chief and at least one other certified by this board or otherwise qualified as specialists in obstetrics gynecology, as specified above, thus insuring an acceptable educational program in obstetrics gynecology

5 Effective July 1, 1948, "temporary approvals pending survey" were *discontinued* It is expected that all presently approved hospitals will soon be initially surveyed, if holding temporary approval, or resurveyed and redesignated if holding unconditional approval

6 Departments holding official approvals for residency training are cautioned that their totals of residents appointed must be kept to the number specified in the A M A—American Board approval notification Dilution of training facilities by unauthorized appointment of residents in excess of these numbers may be cause for reinspection and changes in approval status of such hospitals and their special services

7 For further details of requirements and qualifications for approval for residency training, hospital officials should refer to the latest special issues of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION as they appear during each year, dealing with these subjects, *or should apply to the Council on Medical Education and Hospitals of the American Medical Association for bulletins entitled Essentials of Approved Residencies and Fellowships*

8 Application for residency approval must be made in triplicate on special forms provided for this purpose These forms may be obtained from the Secretary of the Council on Medical Education and Hospitals of the American Medical Association, or from the Secretary of the *American Board of Obstetrics and Gynecology* All statements amplifying an application should also be made in triplicate The hospital should keep a duplicate of all papers

9 The formal application, with all papers, for residency training approval should be submitted primarily to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois Action is taken jointly by the Council and this Board after survey by the Council

10 Approvals are granted according to adequacy of the training program and teaching facilities of various institutions on the following several bases (a) one year approval in obstetrics and gynecology (combined) or one year approval in obstetrics and/or in gynecology (separate), correlated basic science instruction being an essential part of the first year, (b) two-year approval in obstetrics and gynecology (combined) or two year approval in obstetrics and/or in gynecology (separate), provided there is opportunity in the latter instances for some degree of rotation between the two services as well as laboratory instruction in basic sciences, (c) three year approval in obstetrics and gynecology (combined) or in obstetrics or in gynecology, provided there is opportunity for one to one and one half years' service in the branch of the specialty opposite to that in which the candidate holds appointment, as well as laboratory instruction in the basic sciences of both branches

Three (3) years approval is available to institutions holding active medical school teaching affiliations Other institutions may acquire three (3) years approval if their educational programs and teaching facilities are adequate for such approval Probably the most desirable type of approval, from the hospital s standpoint is that of two (2) years in obstetrics and gynecology, because of the greater flexibility regarding appointments These two (2) years may be the first two (2) following a trainee s internship or they may be the last two (2) of his formal training following an internship plus one (1) year of acceptable training in the specialty A service with two year approval may also, if it desires, appoint a man for only one (1) year, as for example if he has already had two (2) years of approved training

Many institutions with three year approval appoint a group of men for the first year, promoting only part and releasing some of them at the end of this time Other institutions are accredited for only one (1) year and both will from year to year provide partly trained men for the two year institutions, which may thus complete a candidate s required training

Some institutions may be granted one year approval either because of limited facilities or, in certain instances, because of the preference of the institution which may require that candidates for such positions must show evidence of having completed two (2) years of satisfactory training

No stipulation has been made that an institution holding only one-year training approval must provide this as the first year of a candidate s formal training It may be his second or even his third year, responsibilities being graded accordingly, but if it is his first year laboratory basic science instruction is an essential part.

On the other hand, candidates may be promoted from year to year in one place for their entire service of three (3) years if this institution is so approved and listed

Exchange residencies within the specialty between approved institutions are acceptable and to be encouraged Many authorities believe that training in more than one institution is broadening to the candidate Farming out to unapproved institutions or services is not acceptable unless the work of such services is directly and carefully supervised by the Chiefs of the service in the approved hospital under which the man is actively appointed and working This should be attested by such Chiefs

Exchange residencies into other specialties cannot be permitted to subtract from the minimal required three (3) years of training divided between obstetrics gynecology

As noted elsewhere, two (2) years of post training practice limited to the specialty is necessary before a candidate becomes eligible for certification

This Board has no objection to residency services being arranged by hospitals for periods longer than three (3) years, unless this dilutes the candidate s clinical training opportunities too much during the first three (3) years However the Board does not accept a fourth year, or more of residency training as a substitute for any part of the required two (2) years of post training practice The importance of post-training practice in the specialty is emphasized as an opportunity for maturing of the candidate and for colleague appraisal of a man s ability when working on his own responsibility in his chosen community

Exception to this ruling may be made for men advancing from their training into and planning to remain in full-time teaching positions These men then must complete at least two (2) years in such positions Consequently the only institutions in which men may work as fourth and fifth year residents and obtain credit for this time as "post training practice" are those directly affiliated with approved schools of medicine as teaching hospitals for undergraduate instruction These full time ' men must hold faculty appointments, must have teaching duties with undergraduate students must be given independent authority more than that of residents, and must make a declaration of intention to remain in full time teaching work

11 Lists of officially approved institutions for formal residency training appear regularly in certain issues of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION Detailed information about any of these can be obtained from the Association

12 Any physician formally obligating himself to serve a residency in a Council on Medical Education and Hospitals of the American Medical Association American Board of Obstetrics and Gynecology approved hospital and thereby eliminating other possible candidates from the position, who breaks his contract without justifiable cause, either before beginning his service or during his period of service, except by mutual consent and agreement between the candidate and the hospital, may be barred from the examinations for certification at the discretion of the board

PRECEPTORSHIP TRAINING

It should be recalled by all concerned that credits for graduate training may be obtainable in certain instances for residency or assistantship service in hospitals not officially approved for residency training Each such case must be individually considered, and credits will be largely dependent on the teaching qualifications of those in charge of the service, and the clinical facilities of the hospital in question

As a substitute for part of the required total of formal residency training, service with a qualified obstetrician gynecologist preceptor, preferably one who has been certified by the board, may be acceptable The exact time basis for this has not been specified, and each case must be reviewed and decided individually by the Credentials Committee after the application is submitted in the regular manner The time allowance for this type of training will vary with the amount of work done with the preceptor It is unusual for more than six months' credit to be given for one year of preceptorship training

An acceptable preceptor is a specialist in obstetrics and gynecology of long experience certified by this board His volume of office and hospital practice must be large enough to offer ample opportunity for the candidate's training Preceptorship training should include participation in procedures of office and hospital practice, including operative and obstetric responsibilities, with adequate time devoted to the studies of basic sciences and pathology and the study of current literature pertaining to this specialty The preceptor should supervise closely the candidate s work and keep an informative record of the candidate s performance in order to facilitate the board s efforts in evaluating the adequacy of the candidate's training

Candidates who propose to offer preceptorship training for any part of their necessary credits before this board should request Preceptorship Training forms to be sent them by the office of the board in addition to the application blank These forms are to be filled out by the candidate, executed by the preceptor and returned by him directly to this office, with a covering letter amplifying any of his statements or the data contained in the preceptorship form

The post training practice requirement cannot be considered as being carried on concurrently with preceptorship training It must be dated from the time when a candidate is considered by his preceptor and the board, as having completed his training The candidate need not discontinue or change the status of his assistantship to establish these dates The Credentials Commit tee is not likely to allow more than six months' training credit to be given for each year of preceptorship training as compared with the more intensive formal residency training

CERTIFICATION

Each certificate granted or issued does not of itself confer or purport to confer on any person any degree or legal qualifications privileges or license to practice obstetrics or gynecology, nor does the board intend in any way to interfere with or limit the professional activities of any duly licensed physician Its chief aim is to standardize qualification for specialists in obstetrics and gynecology, and to certify as specialists those who voluntarily appear before the board for such recognition and certification, according to its regulations and requirements

The board does not subscribe to any hospital rule that certification is to be required for medical appointments especially in ranks lower than chief or senior staff of hospitals or associate professorship in schools of medicine, for the obvious reason that such appointments constitute desirable specialist training

Even though certification or its full equivalent may be considered a desirable requisite to appointment in key positions, as on the senior or chief staff, particularly of hospitals expecting to conduct approved services for training of residents it was never intended by this board that certification should be required by any hospital as a prerequisite to appointment especially in such lesser positions

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Address all communications to the American Board of Ophthalmalogy, Cape Cottage Maine

REQUIREMENTS

All candidates must comply with current board regulations regardless of time of filing application

The secretary is not permitted to make decisions as to requirements These rulings are made only by the Committee on Credentials after reviewing the candidate's formal application

PREREQUISITES

1 High ethical and professional standing

2 Full citizenship in the country where the candidate practices (Limited to countries of North and South America, their possessions and territories)

3 A degree from a medical school of high standing, satisfactory to the board and approved by the Council on Medical Education and Hospitals of the American Medical Association An applicant whose training has been received outside of the United States and Canada must present credentials satisfactory to the board and is required to have the certificate of the National Board of Medical Examiners if he has been in practice less than ten years

4 Completion of an internship of not less than one year in a hospital approved by the same Council

5 Not less than thirty six months (a total of sixty months is required of candidates practicing both ophthalmology and otolaryngology) of combined study, training and practice of ophthalmology in approved medical schools hospitals, clinics, dispensaries laboratories, preceptorships and private practice

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1 *Application* forms must be filled out completely and accurately Letters of endorsement, together with any other required credentials, must be sent to the secretary's office before the deadline date

2 Fee of $100 remitted with application

3 A list of papers or books published

4 Written qualifying test

5 Practical examination

6 Special review of ophthalmic surgery

7 Membership in the American Medical Association or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association

FEES

For written test and original examination, $100 (as mentioned previously)

Repeating Written Qualifying Test, $65
Repeating Practical Examination $65
Single conditions Written or Practical (except surgery), $35
Repeating Practical Surgery, $35
Two or more conditions, $35

Written qualifying test must be taken within three years of date of application Thereafter new application and fee are required

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses Examiners serve without compensation other than actual expenses

SPECIAL TRAINING

This shall include

1 Graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly anatomy, histology embryology, optics, physiologic optics visual physiology and psychology, pathology, bacteriology, pharmacology disorders of ocular motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope retinoscope, slit lamp and microscope Mere factual knowledge is not sufficient, the candidate must have had training in the application of these subjects and in their use in clinical ophthalmology, especially in refraction

2 Active clinical experience in approved hospitals, clinics, dispensaries and private practice Library and laboratory facilities should be utilized for intensive study of cases

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the board

These requirements may be met in various ways

BASIC STUDIES

Anatomy
Embryology and developmental abnormalities
Biochemistry
Pathology
Bacteriology and immunology
Optics and physiologic optics
Ocular physiology
Medical Ophthalmology
Therapeutics and pharmacology
Neuro-ophthalmology

These may be covered by

A *Graduate Study* —By a curricular course in the basic sciences related to ophthalmology in an approved graduate medical school

B *Postgraduate Study* —By courses in individual basic sciences related to ophthalmology as given at various approved institutions The Home Study Course of the American Academy of Ophthalmology and Otolaryngology is recommended

C *Residency* —By advanced study of these subjects during a residency and by correlation of the principles involved with clinical problems

D *Research Fundamental and Clinical* —By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic sciences into direct relation with the concrete clinical problem

CLINICAL EXPERIENCE

A By residency in an approved hospital The most desirable of these residencies have regular lectures covering the entire field of clinical ophthalmology and of the basic subjects as applied in clinical practice Many of these have seminars at which residents report cases which they have carefully worked up These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered

B By residencies in hospitals where regular instruction by lectures and quizzes and seminars is not available The syllabus issued by the board will guide the resident in his selection of topics to be studied

C By fellowships in ophthalmology

D By preceptorship with a well trained and critical ophthal mologist

E After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant This may require only part time work, but due credit will be given Its value to the student depends on how much study he puts into it and on how competent his seniors are

F Research under competent critical and sympathetic super vision will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge Only in this way can the candidate evaluate basic facts in the intelligent critical way which is expected of the specialist in practice

G The candidate who cannot secure the type of residency he desires should not despair, for his progress depends far more on how he uses his opportunities than on the opportunities themselves

WRITTEN QUALIFYING TEST

Before being accepted for examination candidates are given a written test to ascertain their qualifications The questions may cover any part of ophthalmology and are especially devoted to the basic studies as listed above The written test will be given in several principal cities at the same time Choice of cities is determined largely by the geographical distribution of candi dates Candidates found acceptable will be notified to appear for a subsequent practical and clinical examination in ophthalmology

EXAMINATIONS

Examinations usually are held annually at or near the time and place of the meeting of the American Medical Association, also at other times and places at the discretion of the board, depending on the number of applications from any region

The board reserves the right to limit the number of candidates to be admitted to any one examination

Candidates must be examined in all subjects listed in the sections titled Basic Studies and Practical and Clinical Exami nation The time spent in preparation will count less than the knowledge and experience acquired as shown on examination

PRACTICAL AND CLINICAL EXAMINATION

The subjects of the practical examination are as follows (1) External Diseases (2) Ophthalmoscopy, (3) Histopathol ogy, (4) Refraction (5) Motility (6) Ophthalmic Surgery, (7) Perimetry

1 *External Diseases of the Eye and Adnexa* —Various methods of examination diagnoses and treatment

2 *Ophthalmoscopy* —Patient will be examined by the candi date and the findings described or drawn A candidate is required to bring his own ophthalmoscope

3 *Pathology* —The candidate will demonstrate familiarity with general clinical pathology as well as the etiology pathology and bacteriology of diseases of the eye He will be asked to examine microscopic slides and to recognize normal and pathologic histology of the eye

4 *Refraction* —A candidate will examine patients and show mastery of various methods and of the principles of refraction and of retinoscopy He should bring his own retinoscope

5 *Motility* —The candidate will demonstrate on patients his familiarity with routine methods of examination and diagnosis

6 *Ophthalmic Surgery* —A candidate will demonstrate his surgical technic on animal eyes He must bring his own equip ment for performing an extracapsular combined extraction of the lens

7 *Perimetry* —The candidate will be given an opportunity to examine patients by use of the arc perimeter the tangent screen and the stereocampimeter He may also be required to interpret charted fields

SPECIAL REVIEW OF SURGICAL CASES

The board now requires of all candidates a list of ophthalmic operations performed within two years prior to examination This list is to be presented with application

The operations should be listed in groups of each type of surgery The numbers of operations in each group must be totalled and the total number of all operations shown This list must contain the following data

1 Date

2 Condition or conditions for which operation was performed Complications during hospitalization

3 Name and character of operation

4 Identification by hospital or clinic number, or the name of a consultant or confrere who was present at the time of operation

Circumstances which prevent any candidate from fulfilling this requirement should be fully explained, with detailed statement of candidate s surgical experience

CERTIFICATION

The decision of the board is final as to the candidate s passing failure or partial failure The final action of the board is based on the candidate s ethical and professional record training and attainments as well as on the results of his formal examinations

REEXAMINATION

Candidates may be reexamined as often as they desire on satisfactory evidence of adequate additional preparation and payment of reexamination fee A minimum of one year must elapse between examinations when a candidate is conditioned *in one or more subjects A minimum of two years additional* preparation is required of candidates who fail in all subjects The board may at its discretion deny the candidate the privilege of reexamination

NO DEGREES OR LEGAL RESTRICTIONS

Each certificate granted or issued does not of itself confer or purport to confer on any person any degree or legal qualifications, privileges or license to practice ophthalmology, nor does the board intend in any way to interfere with or limit the professional activities of any duly licensed physician Its chief aim is to elevate the standards of qualification for specialists in ophthalmology and to certify as specialists doctors of medicine who appear before the board for such recognition and certification according to its requirements and regulations

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RULES AND PROCEDURES

I GENERAL ELIGIBILITY REQUIREMENTS

1 Satisfactory moral and ethical standing in the profession

2 Graduation from a medical school of the United States or Canada recognized at the time of graduation by the Council on Medical Education and Hospitals of the American Medical Association or graduation from a foreign school considered satisfactory by the aforementioned Council

3 Completion of an internship of not less than one year in a hospital approved at that time by the Council on Medical Education and Hospitals of the American Medical Association or, if trained in foreign countries, in institutions considered satisfactory by the American Board of Orthopaedic Surgery

4 Starting in 1952 and continuing subsequently, applicants taking Part I examinations for the first time must have completed not less than one year of resident training in general surgery in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association, or present evidence of comparable training in general surgery considered satisfactory by the American Board of Orthopaedic Surgery The minimum of one year of training in general surgery is in addition to the minimum of one year of internship

5 Completion of formal requirements for Part I or Part II examinations These formal requirements can only be satisfied by training in one or two categories

(*a*) resident orthopaedic training
(*b*) preceptorship training

Applicants may no longer be admitted to examinations, or be certified, on the basis of extensive specialized practice and/or teaching appointments and/or many short unapproved courses

6 Restriction of practice to orthopaedic surgery

II Requirements for Part I Examination

1 Completion of and compliance with aforementioned general eligibility requirements

2 Citizenship in the United States or Canada, or possession of citizenship papers showing intent to become a full citizen

3 Satisfactory completion of a minimum of one year of approved training in orthopaedic surgery under a program of resident orthopaedic training, or completion of a minimum of five years of orthopaedic training under a preceptorship program Starting in 1952 and continuing subsequently, in addition to the aforementioned requirements, applicants taking Part I examinations for the first time will be required to have satisfactorily completed a minimum of two years of approved training in orthopaedic surgery instead of one year previously required Applicants training on preceptorship programs will still be required to have completed a minimum of five years of orthopaedic training

4 Evidence of competence in training

5 Approval for examination by the Committee on Eligibility of The American Board of Orthopaedic Surgery

III Requirements for Part II Examination

1 Successful completion of Part I examination

2 Full citizenship in the United States or Canada

3 License to practice in the United States or Canada

4 Membership in the American or Canadian Medical Association

5 Satisfactory completion of a minimum of three years of approved resident training in orthopaedic surgery, plus a minimum of two subsequent years of practice period for applicants trained under resident orthopaedic training programs

6 Satisfactory completion of a minimum of five years of practice period for applicants trained under preceptorship programs

7 Evidence of competence in practice

8 Approval for examination by the Committee on Eligibility of the American Board of Orthopaedic Surgery

IV Application and Examination Fee Schedule

1 Application for Part I, fee $15, not returnable

2 Examination, Part I, fee $35, payable only if approved for examination Approved candidates failing to appear for scheduled examinations forfeit fees

3 Application for Part II, fee $15, not returnable

4 Examination, Part II, fee $50, payable only if approved for examination Approved candidates failing to appear for scheduled examinations forfeit fees

5 Reexamination, Part I, fee $35, for Part II, fee $50 No application fee is required for reexamination

V Applications

1 Applications for Part I examinations must be received in the office of the secretary of the board before November 30 of the year preceding the examination

2 Applications for Part II examinations must be received in the office of the Secretary of the Board before August 15 of the year preceding the examination

3 Notices of acceptance for admission to the Part I examinations are mailed to eligible candidates during the month of February in the year of the examinations

4 Notices of acceptance for admission to Part II examinations are mailed to eligible candidates during the month of November in the year preceding the examination

5 Questions of eligibility for examinations are decided by the Committee on Eligibility of the board This committee meets twice yearly The secretary is not empowered to rule on questions of eligibility

VI Examinations

1 Part I examinations are held once yearly, usually in April or May, in various centers in the United States

2 Part II examinations are held once yearly, usually in one center, immediately preceding the meeting of The American Academy of Orthopaedic Surgeons

VII Certification

1 Applicants who successfully pass Part I examination will receive no certificate but will be notified by letter by the secretary

2 Applicants who successfully pass Part II examinations receive a Certificate of the Board which states that they have been found qualified to practice the specialty of orthopaedic surgery in those fields in which they have been trained and examined

3 Candidates obtaining certification without training and examination in children's orthopaedic surgery may subsequently add certification in children's orthopaedic surgery by completing a minimum of one year of approved resident orthopaedic training in children's orthopaedic surgery and successfully passing examination in that field A practice period of one year is required following completion of resident training prior to examination for additional certification

VIII Approved Residencies

1 In the United States, resident training must be taken in institutions approved for resident training in orthopaedic surgery by the Council on Medical Education and Hospitals of the American Medical Association All approved institutions are listed at frequent intervals in the Internship and Residency number of The Journal of the American Medical Association Lists may be obtained from the American Medical Association and are not obtainable from the board

2 The integral parts of approved residencies are designated in lists by the following symbols A—Adult Orthopaedic Surgery C—Children's Orthopaedic Surgery, F—Fracture Surgery, and S—Basic Science training Approved lengths of training in institutions is also designated

3 Candidates electing an additional year of training in adult orthopaedic surgery and fracture surgery in lieu of a year in children's orthopaedic surgery may satisfy requirements by continuing their training beyond the designated approved length of time in institutions approved for adult orthopaedic surgery or adult orthopaedic surgery and fractures

4 Credit for resident training is not retroactive Candidates must receive resident training in institutions during periods that such institutions are on the approved list If candidates are in training at institutions at the time that such institutions become approved resident training credit may be granted from the start of the training period provided that the program is judged to have been satisfactory

5 Candidates in resident training, or possessing signed contracts for future resident training in institutions which become disapproved either in whole or part, receive resident training credit for the entire period during which their contracts are in force

6 The term "fellow" is considered synonymous with "resident" when the position occupied and the work performed is equal in all functions Fellowships in institutions having residents, in which training and responsibilities are not equal, are not credited as resident training

7 Institutions approved for resident training in orthopaedic surgery by the Council on Medical Education and Hospitals of the American Medical Association may, with prior acceptance by

the American Board of Orthopaedic Surgery and notification to the Council, utilize the training facilities of institutions not individually approved for resident training by the aforementioned Council, provided that

(a) The training supplements services in the same categories in which the institution responsible for training is approved by the Council

(b) The resident spends at least half of the minimum required time in each category of training in institutions approved by the Council

8 Foreign residencies must satisfy the American Board of Orthopaedic Surgery

9 Application for approval of the training facilities of any institution must be made to the Council on Medical Education and Hospitals of the American Medical Association, and inspection of such facilities is made by representatives of the Council Final approval is a joint function of the Council and the American Board of Orthopaedic Surgery

IX Requirements of Resident Orthopaedic Training

1 Institutions approved for full three year programs including all parts of the training requirements may integrate all parts so that they are given concurrently

2. Institutions now approved for less than three years of orthopaedic resident training should arrange with other approved institutions to provide complete three year programs for all residents It is planned that such desirable complete programs, with their participating institutions, will be listed separately

3 The minimum requirements of orthopaedic resident training are as follows

(a) One year of training in adult orthopaedic surgery

(b) Six months of training in the basic sciences

(c) Six months of training in fracture surgery

(d) One year of training in children's orthopaedic surgery or, if elected, an additional year of training in adult orthopaedic surgery and fracture training in place of training in children's orthopaedic surgery

4 Candidates who elect an additional year of training in adult orthopaedic and fracture surgery instead of a year in children's orthopaedic surgery may satisfy the requirements by taking the additional year of training in adult orthopaedic surgery or six months of adult orthopaedic surgery and six months of fracture surgery, but may not take the entire year of training in fracture surgery

5 Training in adult and children's orthopaedic surgery must include observation and first hand experience in diagnosis, treatment, operative and postoperative care of orthopaedic problems

6 Training in fracture surgery must include observation and first hand experience in diagnosis, treatment, operative and postoperative care of recent and old fractures

7 Training in the basic sciences must instill a sound knowledge of anatomy, pathology, physiology, bacteriology and biochemistry as these basic sciences apply to orthopaedic surgery

8 Candidates may complete the training requirements by training in several approved institutions provided that all the aforementioned minimum requirements are satisfied on approved services

9 No training period of less than six consecutive months in one institution may be credited toward resident training requirements, except a few short courses on the board's approved list and recognized supplementary services of approved institutions

10 Candidates in resident training may not engage in private practice

11 Candidates in resident orthopaedic training must receive their training in institutions and may not receive credit for time spent assisting in private office practice, which is considered as preceptorship training

12 Candidates trained on accelerated programs during the war years are credited with one year of training for each nine months' residency on established accelerated programs

X Requirements of Preceptorship Training

1 The preceptor must possess certification by the American Board of Orthopaedic Surgery

2 The practice of the preceptor must be extensive enough to give the candidate experience in all phases of orthopaedic practice

3 The preceptor must devote special periods of time each week, outside of the routine hours employed in hospitals and office practice, to assist the candidate with organized courses of study similar to those received during resident training

4 If facilities and instruction in the related basic sciences are not available, the candidate must spend a minimum of six months as a student in an institution approved for basic science training in orthopaedic surgery

5 The candidate must train as a full time assistant to the preceptor and may not maintain a separate office or engage in individual practice

6 The minimum training period in orthopaedic surgery under the preceptorship program is five years, after which time the candidate may file application for Part I examinations

7 The minimum practice period required for candidates trained under the preceptorship program is five years, after which time the candidate may file application for Part II examinations This makes a minimum total of ten years from the start of orthopaedic training to eligibility for Part II examinations

8 The practice period may be satisfied in individual private practice or in assistantship or partnership as desired by the candidate

9 Candidates who combine preceptorship training with approved resident training receive credit for the preceptorship portion of their training only if it totals a minimum of two years Two years of preceptorship training is credited as the equivalent of one year of resident credit The practice period requirement is likewise evaluated so that three years of practice are required if the candidate submits two years of preceptorship and two years of resident training, and four years of practice are required if four years of preceptorship and one year of resident training are submitted

XI Sequence of Examinations and Practice Requirements

1 No person may take Part II examinations until after successful completion of Part I examinations

2 Successful completion of Part I examinations in no way obligates the board to declare a candidate eligible for Part II examinations

3 Regardless of how extensive or prolonged a practice a candidate may have had prior to completing the training requirements, such time may not be credited toward practice requirements All practice requirements must be satisfied subsequent to completion of training requirements

4 Candidates may not be admitted to examinations on the basis of prolonged practice but must qualify on the basis of formal training in one of the categories previously detailed

XII Practice requirements

1 Candidates must maintain high ethical and professional standards

2 Candidates must strive to increase their scientific knowledge

3 Candidates must limit their practice to orthopaedic surgery

4 Candidates who have had no approved training in children's orthopaedic surgery must confine their practice to fracture and adult orthopaedic surgery

5 Candidates trained in resident orthopaedic training are required to complete a minimum of two years or orthopaedic practice subsequent to the completion of their formal training before becoming eligible for Part II examinations

6 Candidates in private practice must spend a minimum of fourteen months in one locality immediately prior to application in order that practice may be properly evaluated

7 Candidates employed full time in institutions may satisfy practice requirements by serving a minimum of two years, but minimum requirements may not be satisfied by mixing full time institutional work with preceding or subsequent time in private practice

8 Candidates trained by preceptorship are required to complete a minimum of five years of orthopaedic practice before becoming eligible for Part II examinations The practice period may be independent of the preceptor

XIII METHOD OF EXAMINATION

1 Part I examinations consist of a written examination and oral examinations Material covered includes fundamental surgical principles, elementary fractures and orthopaedic procedures, history taking and physical examinations as well as those parts of anatomy, pathology, physiology and biochemistry related to orthopaedic surgery The oral examinations consist of five parts (*a*) anatomy, (*b*) pathology, (*c*) physiology and biochemistry, (*d*) surgery and (*e*) fractures and orthopaedic surgery

2 Part II examinations consist of a written examination and oral examinations Material covered includes advanced work in all phases of orthopaedic surgery The oral examinations consist of five parts (*a*) anatomy, (*b*) pathology, (*c*) children's orthopaedic surgery, (*d*) fractures and (*e*) adult orthopaedic surgery

3 *Candidates who have not had approved training in children s orthopaedic surgery will not be examined in that branch of orthopaedic surgery*

4 *Candidates are notified by letter as to whether they passed or failed in the examinations No information regarding results is available until such letters are mailed*

5 *Results of integral parts of examinations are not available to either candidates or diplomates of the board*

6 Candidates who have passed Part I examinations are required to take Part II examinations within a ten year subsequent period *If there is a lapse of more than ten years candidates must repeat Part I examinations and must then become eligible by the requirements then in force*

XIV REEXAMINATIONS

1 Applicants who fail to pass Part I or Part II examinations may be reexamined a second or third time in each Part, but must pay the prescribed examination fee each time of reexamination

2 Applicants who fail to appear for second and if necessary, third reexaminations within three years after first failure must submit new applications with the appropriate fees

3 After three successive failures in Part I or Part II examinations, applicants must present evidence of additional orthopaedic training satisfactory to the board before submitting new applications

XV MILITARY SERVICE

1 Medical officers who have elected service in the military forces as their life careers compete for certification on the same basis as do doctors in civilian practice

2 Doctors who serve for a minimum of one year in the military forces during the war years between January 1, 1941 and July 1, 1946, are granted a bonus of one year of practice credit, provided that the same time is not used for resident training credit

3 Applicants who served in military hospitals whose service is judged by the board to have been equal to that of approved resident orthopaedic training, and who were on such service for a minimum of one year between January 1, 1941 and July 1, 1946, may be granted credit for one year of resident orthopaedic training, provided that the same time is not used for practice credit Applicants requesting such credit must submit completed "Record of Professional Assignments booklets with their applications

4 No applicant may be granted more than one year of resident training credit and one year of practice credit for military service during the war years

5 After July 1, 1946, credit for orthopaedic training must have been or must be obtained by assignment as residents in military hospitals on the approved list for resident orthopaedic training, the same as in civilian life

6 Medical officers assigned to civilian institutions on the approved list for resident orthopaedic training receive the same credit as do civilian candidates

7 Medical officers who have elected service in the military forces as their life careers must satisfy the practice requirements by military assignments in which their duties are limited to the practice of orthopaedic surgery

XVI RECORDS OF SURGICAL CASES AND INSPECTIONS

1 Records of a specified number of consecutive surgical cases may be requested by the board in order to evaluate properly the work of an applicant

2 A representative of the board may visit a community in order to evaluate properly the work of an applicant

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GENERAL REQUIREMENTS

The following general qualifications of candidates for examination are required by the board

1 A candidate must have been a citizen of the United States or the Dominion of Canada for three years or more

- (*a*) A candidate must have been a graduate five years or more of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association
- (*b*) A candidate must be of known good moral character and be ethical in his professional relationships
- (*c*) A candidate trained in a foreign country must be able to give proof of medical and graduate training comparable to the requirements of the board
- (*d*) A candidate from the United States or the Dominion of Canada must be a member of the American Medical Association or of the Canadian Medical Association respectively or other such medical societies of equal standing as are recognized by the Council on Medical Education and Hospitals of the American Medical Association

2 Candidates from foreign countries, who have received their training in otolaryngology in the United States are eligible for examination at the discretion of the board, providing they show proof that they are permanent residents and citizens of their respective foreign countries and provided they meet the general academic requirements of the board

SPECIAL REQUIREMENTS

1 A candidate must have had a general internship, of at least one year, in a hospital approved by the Council on Medical Educations and Hospitals of the American Medical Association

2 A candidate must be proficient in the applied basic sciences, fundamental to the intelligent practice of otolaryngology These include anatomy of the ear, nose and throat, neck chest, esophagus and nervous system, gross pathology and histopathology, bacteriology, physiology, didactic otolaryngology and the general fundamentals of surgery (This requirement may be fulfilled in a residency or fellowship service or in an approved organized postgraduate course)

3 In addition to the general internship, the required clinical training in otolaryngology may have been acquired in any of the following ways

(a) A three years' residency or fellowship in otolaryngology approved by the Council on Medical Education and Hospitals of the American Medical Association

(b) A four years residency or fellowship in otolaryngology and ophthalmology approved by the Council on Medical Education and Hospitals of the American Medical Association, provided one half of the training has been in otolaryngology

(c) A two years residency or fellowship in otolaryngology or a three years combined residency or fellowship in otolaryngology and ophthalmology approved by the Council on Medical Education and Hospitals of the American Medical Association provided this be preceded by at least one year s residency training in surgery or medicine, or by an additional year in an approved internship

(d) At least one year must be spent in private, group or institutional practice of otolaryngology following the period of special training

4 A candidate may be qualified for examination, at the discretion of the American Board of Otolaryngology, if in addition to the General Requirements and Special Requirements, he has limited his practice to otolaryngology for seven years in association with a hospital staff approved by the Council on Medical Education and Hospitals of the American Medical Association and the board

5 In exceptional circumstances certain candidates who cannot meet all of the above requirements may be accepted for examination on recommendation of the Credentials Committee, substantiated by action of the board

6 A limited certificate in one of the subspecialties of otolaryngology may be issued at the discretion of the board to an exceptionally well qualified individual in the special field in which the certificate is desired

All applicants must comply with current board regulations regardless of the time of filing application

APPLICATION AND FEES

1 Application must be made in duplicate on special blanks procured from the secretary The completed application blanks must be returned to the secretary together with the other required credentials, at least one hundred and twenty days in advance of the examination at which the candidate desires to appear

2 The applications must be accompanied by two small photographs of the candidate, together with verification of the period of enrolment from the institutions where training in otolaryngology was obtained, and the names of two or more otolaryngologists preferably diplomates of the board from the vicinity of the candidate s place of residency, to be used as references

3 The fee for the examination is $100 no part of which is returnable Of this sum $25 must accompany the application No application will be acted on until the $25 application fee is received The balance of the fee—$75—must be paid to the secretary on notification that the candidate has been accepted before an appointment is given for an examination A reexamination fee of $50 is required of candidates conditioned in one or more subjects

4 The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses Examiners serve without compensation other than actual expense

5 The application remains valid for three years An applicant must appear for examination within this time or forfeit the fee

6 Candidates whose credentials have been found satisfactory and who meet the requirements of the board will be notified ninety days prior to the date of examination The number of candidates who can be admitted to any one examination is limited Due to a large number of applications on file, delay in assignment for examination may be inevitable Appointments will be given in the order applications are accepted and on payment of the balance of the examination fee

7 The board, acting as a committee of the whole, reserves the right to reject an applicant for any reason deemed advisable and without stating the same and the action of the board shall be final

EXAMINATION

Examination will be held at such time and place as the judgment of the board may dictate Advance notice of examinations will be given in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the several special journals devoted to otolaryngology So far as is possible these will be held biannually at, or near, the time and place of meeting of the American Medical Association, or special societies and of the American Academy of Ophthalmology and Otolaryngology The examinations cover from two to four days

Scope—This examination encompasses all phases of otolaryngology and peroral endoscopy, including maxillofacial surgery, and surgery of the neck, excluding the thyroid

The type of examination is as follows

1 Clinical covering the actual handling of patients, including history taking, physical and functional examinations, the use of laboratory and x ray findings and a discussion of differential diagnosis

2 Didactic, oral examinations covering all phases of otolaryngology

3 Gross and microscopic pathology

4 A written examination may be included when the board deems this advisable

REEXAMINATION

A candidate who is conditioned in examination may be admitted to a subsequent examination after one year and within the three year period dating from his application on payment of an additional fee of $50 and one hundred and twenty days' notice of intention to appear is required

Candidates who have failed in the examination may be accepted for reexamination on recommendations of the Credentials Committee Satisfactory evidence of further study and progress will be required A new application must be filed The fee for reexamination for such candidates is $100 $25 of which must accompany the application The balance of the fee, $75 will be due on notification of acceptance

CERTIFICATION

1 A certificate granted by the board does not of itself confer or purport to confer any degree or legal qualifications privileges or license to practice otolaryngology nor does the board intend or attempt in any way to interfere with or limit the professional rights and activities of any duly licensed physician Its aim is to improve the standards of practice of otolaryngology and to certify as specialists those who voluntarily comply with its requirements and regulations

2 The final action of the board is based on the candidate's ethical and professional record training and attainments as well as on the results of his formal examinations

AMERICAN BOARD OF PATHOLOGY

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A GENERAL REQUIREMENTS

1 Satisfactory moral and ethical standing in the profession

2 License to practice medicine or a certificate of the National Board of Medical Examiners

3 Membership or associate membership in the American Medical Association or membership in a national society acceptable to the board by citizens of the United States (At present, these include American Association of Pathologists and Bacteriologists, American Society of Clinical Pathologists, American Medical Association, or American Society for Experimental Pathology) For citizens of other countries, membership in a national medical society of that country is required

4 The applicant must devote his time primarily and principally to the practice of pathology

B PROFESSIONAL EDUCATION

1 Graduation from a medical school in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a medical school in other countries acceptable to the board

C SPECIAL TRAINING AND EXPERIENCE

1 The board admits candidates to examinations who are otherwise eligible and who have had *either* of two following types of training and experience

(*a*) After five years, if four of the five years have been in institutions approved by the Council on Medical Education and Hospitals of the American Medical Association or by the board, or

(*b*) After eleven years if none of the training and experience has been in institutions so approved

2. The specific requirements for those acceptable after five years are as follows

(*a*) Pathologic anatomy only

(1) Four years of supervised study and training in an institution approved for residency training in pathologic anatomy by the Council on Medical Education and Hospitals of the American Medical Association or by the board It is immaterial whether the candidate holds the title of resident or fellow or assistant Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the preclinical departments of a university for one of the four years In addition, time, not to exceed twelve months, spent in a department of pathology of an approved school of medicine after the completion of the second year of undergraduate study may be counted for full credit toward the four years

(2) One additional year which may be a continuation of the preceding or may be independent practice of pathologic anatomy in a hospital approved by the American Medical Association or other institutions acceptable to the board

(*b*) Clinical pathology only

(1) Four years of supervised study and training in an institution approved for residency training in clinical pathology by the Council on Medical Education and Hospitals of the American Medical Association or by the board It is immaterial whether the candidate holds the title of resident or fellow or assistant Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the preclinical departments of a university, for one of the four years *Candidates* holding also a master's or doctorate degree in a special field of clinical pathology (bacteriology serology, chemistry, parasitology or hematology) may obtain time credit *for not* more than twelve to twenty-four months toward the four years for this work, regardless of whether it was taken before or after the medical degree The evaluation of time credit will depend on how much of the broad field of clinical pathology was covered in the graduate work

(2) One additional year which may be a continuation of the preceding or may be independent practice of clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board

(*c*) Pathologic anatomy and clinical pathology

(*1*) Four years of supervised study and training divided as follows

(*a*) Two years of supervised study and training in pathologic anatomy as outlined in the preceding paragraph 2-(*a*)-(1)

(*b*) Two years of supervised study and training in clinical pathology as outlined in the preceding paragraph 2 (*b*) (1) Candidates declare deligible before July 1, 1953 may at their own election substitute one year (twelve months) of a straight or rotating clinical internship for one year of this special training in clinical pathology After July 1, 1953, all candidates applying for both pathologic *anatomy and clinical pathology will be* required to have two years of supervised training in clinical pathology

(2) One additional year which may be a continuation of the preceding or may be independent practice of both pathologic anatomy and clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board After July 1, 1953, candidates who elect to claim credit for one year for a clinical internship must take this fifth year as supervised study and training in clinical pathology in institutions approved for residency training in clinical pathology by the Councl on Medical Education and Hospitals of the American Med cal Association or by the board Candidates declared eligible after July 1, 1953, who do not take a clinical internship, may, after four years of training as outlined in 2-(1)-(*a*) and (*b*), spend the fifth year in independent practice in an institution or laboratory acceptable to the board.

NOTE —As outlined in the preceding paragraphs, the total time requirements of the board are unchanged after July 1, 1953, namely, five years of study or practice after graduation from medical school, with exceptions noted in *sections* 2-(*a*)-(*1*) and 2-(*b*)-(*1*)

3 The specific requirements for those acceptable after eleven years are as follows

(*a*) The practice of pathology under circumstances acceptable to the board for a period of not less than eleven years At the election of the candidates, a period not to exceed one year of straight or rotating clinical internship may be substituted for one of the eleven years For those candidates in this category who have had some special study and training in pathologic anatomy or clinical pathology acceptable under paragraphs 2-(*a*), (*b*) or (*c*), double time credit will be allowed Thus, if a person has two years of acceptable supervised study and training, only seven years of practice are required

D SPECIAL QUALIFICATIONS

1 Prior to Dec 31, 1947, the board at its discretion certified candidates without examination, if the following *conditions were* met as of July 1, 1939

(*a*) That the candidate has been for a period of five years of professional rank in a department of pathology in an approved medical school, or

(*b*) That the candidate *had been practicing* pathology for ten years in a senior *position in* a hospital having an adequate department of pathology, approved by the Council on Medical Education and Hospitals of the American Medical Association or *in an* institution acceptable to the board

CREDIT FOR MILITARY SERVICE

Credit may be allowed for training and experience in pathology in the federal services during the *period July* 1, 1940 to June 30, 1947 This credit for training or experience or both is *given on an* individual basis and will depend on the opportunity the applicant has had, as indicated by his or her medical service record in the specialty of pathology

After July 1, 1947, credit for those military services will be given on the same basis as it is in civilian institutions, except that the rule in the preceding paragraph will not apply to reserve officers who continue on active duty or are called to active duty after that date

SUBSPECIALTIES OF PATHOLOGY
(IN FORCE AFTER JULY 1 1948)

Candidates who have met all general requirements and who have successfully passed the examination in pathologic anatomy and clinical pathology may apply for special designation of a subspecialty of pathologic anatomy or clinical pathology The board, at its discretion, may approve this application and after the candidate has successfully passed a prescribed examination, will issue a certificate designating the subspecialty, reading "Pathologic Anatomy (Neuropathology)," "Clinical Pathology (Clinical Bacteriology)," etc

Candidates who have met all general requirements and who have had five years of special training and experience in a special field of pathology which is acceptable to the board may apply to the board for certification in this special field The board at its discretion, may approve this application, and after the candidate has successfully passed a prescribed examination, will issue a certificate reading 'Neuropathology,' 'Clinical Bacteriology," etc

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. An application cannot be given consideration by the board unless it is accompanied by the application fee

The application or examination fee for candidates is $50 If the candidate fails in his examination he will be admitted to a second examination after one year, but not later than three years without additional fee After two reexaminations the applicant must file a new application and pay an additional fee before a fourth examination will be given

The application fee of $50 has been determined after careful consideration and is based on actual estimates of the expenses of examination and administration None of the board members receive any compensation for their services except actual expenses incurred

If the applicant, for any reason, is deemed ineligible for examination by the board, his fee will be returned, however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for the examination

EXAMINATIONS

Written and oral examinations will be held at the discretion of the board at or near the time and place of national medical meetings If a number of applications from any region of the country are received, an examination in conjunction with a national medical meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examiners will be as small as possible

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis, interpretation and technic The applicant may apply for certification in either pathologic anatomy or clinical pathology or both

The examinations in pathologic anatomy consist of a written test an oral examination on gross pathology and a practical examination in microscopic pathology The examination in clinical pathology consists of a written test and an oral and practical examination in the six phases of clinical pathology bacteriology hematology, clinical chemistry, parasitology, serology and clinical microscopy

DEFINITIONS

1 Pathologic anatomy is that branch of pathology which deals with the morphologic aspects of disease, recognition being given that that definition covers two phases of pathology

(*a*) The applied phase with special attention to the description and diagnosis of gross and microscopic specimens

(*b*) The academic phases of teaching and general morphologic diagnosis

2 Clinical pathology is that branch of pathology which deals with bacteriology immunology, clinical chemistry, parasitology, hematology endocrinology and clinical microscopy the application of the physical and biologic sciences to the diagnosis, prognosis and treatment of disease

BOARD NOT AN EDUCATIONAL INSTITUTION

The board is in no sense an educational institution and the certificates of the board are not to be considered degrees Therefore, the certificate does not confer on any person legal qualifications privileges, or license to practice medicine or the specialty of pathology The board does not purport in any way to interfere with or limit the professional activities of any licensed physician Its chief aim is to standardize the qualifications for the specialty of pathology and to issue certificates to those voluntarily complying with the requirements of the board

CRITERIA FOR APPROVAL OF INSTITUTIONS FOR TRAINING IN PATHOLOGY

In Sections C-2 a, C-2-b, and C-2-c of the General Requirements it is stated that candidates must have certain periods of supervised study and training The American Board of Pathology, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association, certifies hospitals in the United States as satisfactory for this supervised study and training Lists of these hospitals are published in the Internship and Residency Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION each year In addition, the American Board of Pathology recognizes certain hospitals outside the United States and certain laboratories not connected with hospitals in the United States Inquiries concerning these should be directed to the Secretary of the Board

The general criteria for approval of hospitals and laboratories are both qualitative and quantitative On the score of quality, consideration is given to the qualifications of the Director of Laboratories and the associates and assistants the supervision of work of the person in training, the excellence of the educational program, and the exactness and completeness of the laboratory work performed On the score of quantity, consideration is given to the volume and distribution of laboratory work, both in absolute numbers and in relation to the size of the hospital, to the diversity and completeness of tests performed, to the size and equipment of the laboratory, and to the number of professional and nonprofessional personnel in relation to the volume of work

In general the qualitative standards will determine whether or not a hospital or laboratory is approved, and the quantitative standards will determine whether the approval is for 1, 2, 3 or 4 years of credit toward the requirements of the Board

In evaluation of applications the Board takes into consideration the following criteria

1 Director of laboratories or pathologist
   - (*a*) It is required that the responsible head of the laboratory hold the certificate of the American Board of Pathology in the subject for which the hospital is approved, or be eligible for certification, and that he or she spend full time in the hospital Full time is not interpreted in terms of hours, but rather that the director have no obligation outside the one approved hospital except in a university department of pathology where he and the residents have an opportunity to participate in the educational program,
   - (*b*) In special instances, the equivalent of full time by two or more qualified individuals will be accepted and one person need not spend the entire working day in the laboratory,
   - (*c*) In special instances, two or more hospitals will be approved as a unit with a single full time director of laboratories if it is apparent that a satisfactory training program can be conducted,
   - (*d*) In hospitals with over 350 beds, it is expected that the professional staff, in addition to the pathologist, will include one or more persons with special training and qualifications in the subspecialties of clinical pathology

2 Technicians

There are no absolute criteria, but it is expected that the number of technicians will be proportional to the volume of laboratory work and that, insofar as possible, the technicians will hold the certificate of the Registry of Medical Technologists of the American Society of Clinical Pathologists

3 Floor space of laboratory
In general it is believed that the size of the laboratory should be related to the size of the hospital and the volume of laboratory work A minimal ratio is 4 square feet of space in the laboratory, including morgue and autopsy room, for each bed in the hospital

4 Equipment for the laboratory
The variety and completeness of laboratory tests performed depends on the size of the hospital In all hospitals there should be facilities for the more common tests in clinical pathology, for study of surgical specimens, and for performance of autopsies In larger hospitals, the variety of tests performed should be larger and in hospitals with over 500 beds all recognized laboratory procedures should be available for study and treatment of the patients

5 Autopsy percentage
No institution with a percentage of less than 15 will be approved and those institutions with percentages between 15 and 40 will be given special scrutiny

6 Examination of surgical specimens
All surgical specimens should be sent to the laboratory for gross examination, and microscopic examinations should be made unless there are general or special reasons not to do so

7 Indices
There should be indices according to the names of the patients and the diagnoses of all surgical and autopsy material Indices of clinical pathology are left to the discretion of the hospital

8 Museum
There should be available fixed anatomic and pathologic specimens for study by the staff in proportion to the size of the hospital Properly filed and indexed color photographs may in part be substituted for museum specimens

9 Library
A reasonably complete library of modern books and recent unbound and bound journals should be available to the hospital, and the more commonly used books and journals should be on hand in the laboratory

10 Educational program
The work of the person in training should be supervised Conferences, seminars, journal clubs, and demonstrations should be conducted as frequently as the volume of material and the size of the staff justifies A clinicopathologic conference must be held at least every 2 weeks

11 Volume of laboratory work
(*a*) As indicated in the following categories no hospitals with less than 75 autopsies, 1000 surgical specimens and 25,000 tests in clinical pathology annually will be approved (Category D) except as outlined in the following paragraphs It is the belief of the board that less material than this is inadequate for the training of a pathologist
(*b*) In the field of clinical pathology, there should be a reasonable diversification of tests and in each category there should be sufficient absolute volume to provide training and experience There are no absolute criteria, but special scrutiny will be given to a hospital in which there is not a reasonable diversification and variety
(*c*) In the field of pathologic anatomy, a deficiency in either autopsies or surgical specimens may be made up by an excess of the other, if the deficiency does not exceed 20 per cent of the minimum required in the ratio of 1 autopsy to 75 surgical specimens Thus in a hospital approved for one year in pathologic anatomy and clinical pathology, the minimums are 75 autopsies and 1 000 surgical specimens If a hospital has 2,500 surgical specimens, it is acceptable if there are only 60 autopsies

If a hospital has met these minimal qualitative and quantitative standards, it will then, on the basis of the following quantitative standards, be approved for 1, 2, 3 or 4 years of training in pathologic anatomy, or clinical pathology, or both or some special field as shown for the number of residents indicated

CATEGORY A In both pathologic anatomy and clinical pathology for 4 years (as required of all candidates seeking certification in both fields who are examined after July 1, 1952)

Minimum 150 autopsies, 1750 surgical specimens, and 65,000 tests in clinical pathology for 4 residents Additional resident for each 50 autopsies or 500 surgical specimens, or 20,000 tests in clinical pathology

CATEGORY B In both pathologic anatomy and clinical pathology for 3 years This meets all requirements of the board for supervised training until July 1, 1952 Candidates examined after that date who seek certification in both subjects must take an additional year of supervised training in clinical pathology or pathologic anatomy, in another hospital which is approved for the deficiency of training required

Minimum 125 autopsies, 1500 surgical specimens, and 50,000 tests in clinical pathology for 3 residents Additional resident for each 50 autopsies, 500 surgical specimens, or 20,000 tests in clinical pathology

CATEGORY C In both pathologic anatomy and clinical pathology for 2 years Candidates taking two years in these institutions must have an additional year (2 years after July 1, 1952) in an institution in category A, B or D

Minimum 100 autopsies, 1250 surgical specimens, and 40,000 tests in clinical pathology for 2 residents Additional resident for each 50 autopsies, or 500 surgical specimens, or 20,000 tests in clinical pathology

CATEGORY D In both pathologic anatomy and clinical pathology for 1 year Candidates taking training in these institutions must have an additional 2 years (3 years after July 1, 1952) in institutions which are approved for the deficiency of training required

Minimum 75 autopsies, 1000 surgical specimens and 25,000 tests in clinical pathology for 1 resident Additional resident for each 50 autopsies, or 500 surgical specimens, or 20,000 tests in clinical pathology

Category E In pathologic anatomy only, for 3 or more years Candidates taking all training in these institutions will not be eligible for certification in clinical pathology unless an additional year (2 years after July 1, 1952) is taken in clinical pathology in institutions which are approved for the deficiency of training required

Minimum 175 autopsies and 1500 surgical specimens for 3 residents Additional resident for each 50 autopsies or 500 surgical specimens

CATEGORY F In pathologic anatomy only, for 2 years Candidates taking training in these institutions will not be eligible for certification in clinical pathology unless they take one additional year full time in clinical pathology (2 years after July 1, 1952) in institutions which are approved for the deficiency of training required, and will be eligible in pathologic anatomy only if another year is taken in another institution which is approved for one or more years in pathologic anatomy

Minimum 125 autopsies and 1250 surgical specimens for 2 residents Additional resident for each 50 autopsies or 500 surgical specimens

CATEGORY G In pathologic anatomy only, for 1 year Candidates training in these institutions will not be eligible in both pathologic anatomy and clinical pathology unless they take an additional year in pathologic anatomy and an additional year (2 years after July 1, 1952) in institutions which are approved for these periods of training Candidates seeking certification in pathologic anatomy only must study an additional 2 years in institutions which are approved for that period of training.

Minimum 75 autopsies and 1000 surgical specimens for 1 resident Additional resident for each 50 autopsies or 500 surgical specimens

CATEGORY H For postmortem part of pathologic anatomy for 2 years Credit is never allowed for more than 2 years Candidates taking training in these institutions may pursue further training as follows 1 For pathologic anatomy only An additional year in an institution in Category A B, C E, F or G with assignment to surgical pathology principally 2 For pathologic anatomy and clinical pathology An additional year (two years after July 1, 1952) in an institution in Category A, B C, L, M or N with assignment to clinical pathology and ½ year assigned to surgical pathology principally in an institution in Category A, B C, or J

Minimum 125 autopsies for 2 residents An additional resident for each 60 autopsies

Category I For postmortem part of pathologic anatomy for 1 year Candidates taking training in these institutions may pursue further training as follows 1 For pathologic anatomy only An additional two years in an institution in Category A, B, C, E, F or G with general assignments 2 For pathologic anatomy and clinical pathology An additional year (2 years after July 1, 1952) in an institution in Category A B, C, L M or N with assignment to clinical pathology and 1 year to an institution in Category A B, C, E, F or G

Minimum 75 autopsies for 1 resident

Category J Surgical pathology part of pathologic anatomy for 1 year Credit is never allowed for more than 1 year and the director of the laboratory must hold the certificate of the American Board of Pathology in pathologic anatomy or be eligible for certification Candidates training in these institutions may pursue further training as follows 1 For pathologic anatomy only An additional 2 years in an institution in Category H or in an institution of Category A, B or C with assignment to post mortem pathology only 2 For pathologic anatomy and clinical pathology An additional year (2 years after July 1, 1952) in an institution in Category A, B, C, L M or N with assignment to clinical pathology full time and an additional year to an institution in Category A, B D, E, F, G or H with assignment to postmortem pathology full time

Minimum 2000 surgical specimens for 1 resident An additional resident for each 1000 surgical specimens

Category K Special pathology as part of pathologic anatomy Credit for not to exceed ¼ the time credit (1 year if seeking certification in pathologic anatomy only 6 months if seeking both pathologic anatomy and clinical pathology) of candidates applying in pathologic anatomy may be taken in special laboratories with limited activities such as neuropathology, orthopedic pathology ophthalmic pathology, etc The candidate who receives credit in this category may, on request, have the field of special pathology designated on the certificate of the board

Category L Clinical pathology for 3 or more years Candidates taking 3 years of training in these institutions will not be eligible for pathologic anatomy unless they take an additional 2 years in institutions approved for pathologic anatomy

Minimum 100,000 tests in clinical pathology for 3 residents Additional resident for each 50 000 tests

Category M Clinical pathology for 2 years Candidates taking 2 years' training in these institutions must take the same additional training as in Category L to be eligible for pathologic anatomy also To be eligible for clinical pathology only, an additional year of clinical pathology must be taken in an approved institution

Minimum 75 000 tests in clinical pathology for 2 residents An additional resident for each 50 000 tests

Category N Clinical pathology for 1 year Candidates taking training in those institutions must take an additional 2 years in an institution in Category A, B, C L or M assigned to clinical pathology for eligibility in clinical pathology only To be eligible in pathologic anatomy and clinical pathology, an additional 2 years in approved institutions is required

Minimum 50 000 tests in clinical pathology for 1 resident

Category O Special clinical pathology as part of clinical pathology Candidates applying for clinical pathology only may receive credit for not in excess of ¼ of the training period (1 year if seeking certification in clinical pathology only, six months if seeking both pathologic anatomy and clinical pathology) for work in a special field of clinical pathology) for work in a special field of clinical pathology such as bacteriology serology, etc Under these circumstances on request the special field will be designated on the certificate of the board

Category P Research Residence in certain institutions in which full time is devoted to research with a direct application to the practice of pathologic anatomy or clinical pathology may be accepted for credit not to exceed one third the time requirement (20 months if no clinical internship 16 months if a clinical internship was taken) The board encourages research and believes that all candidates should carry on investigation during their training in all institutions Therefore this category is only for those wishing to do full time research

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APPLICANTS FOR CERTIFICATES

Requirements for Applicants[1]—All candidates for examination for certification must meet the following requirements

1 Graduation from an approved medical school

2 One year of rotating or one year, pediatric or other internship in an approved hospital

3 Two years of specialized residency type training in an approved pediatric center

On May 1 1946, it was ruled that at least one year of the two years of required residency training must be a full time pediatric in patient residency or internship in an approved institution Because of the shortage of residencies, the board at this time voted that temporarily' the second year of required residency training might be met in the ways listed below, although the board recommends that whenever possible candidates complete the two years as regular residents

All applicants admitted to approved graduate or postgraduate courses in pediatrics on or after July 1, 1950 shall receive residency training credit for that number of months actually spent in full time attendance at such courses, in excess of three months and up to a maximum of twelve months No credit shall be granted for part time graduate or postgraduate courses Courses of less than three months are credited only under special circumstances

(*a*) A maximum of three months credit each is allowed for full time residency type training in allied pediatric subjects, such as pediatric allergy, pediatric psychiatry, pediatric pathology, pediatric cardiology and newborn service

(*b*) A maximum of six months credit is allowed for residency training in an approved contagious disease hospital

4 A subsequent term of two years of specialized study or practice or a combination of the two Credit for one year toward this requirement is allowed for military service The maximum credit that any candidate may receive toward the practice requirement for work done prior to the completion of residency training is one year

Attention is invited to the fact that the primary duty of the resident must be the care of patients under supervision if full credit in satisfaction of the residency training requirement is expected Research residencies which involve little or no clinical training are creditable for only three months Research residencies which include significant clinical training may be prorated to a total of six months for a year of service Teaching fellowships may not be offered in lieu of residency appointments

Both research residencies and teaching fellowships are, of course, entirely acceptable in satisfaction of the practice or further study requirement Portions of a research residency not applicable for residency training credit may be carried over for practice credit

Preceptorships are not accepted for credit toward the residency requirement, but are accepted toward the practice requirement

The board defines service in a pediatric center as full time devoted to rounded experience in an approved hospital which includes ward and outpatient service experience with newborn, including prematures and both therapeutic and preventive pediatrics It is expected also, that the service will include adequate graduate training in the basic medical sciences as well as in the clinical laboratory and public health aspects of the specialty The time served in pediatric centers need not be continuous or spent in the same institution

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[1] To avoid misunderstanding, the board advises all candidates to communicate with the office of the executive secretary before entering on training

3 Floor space of laboratory
In general, it is believed that the size of the laboratory should be related to the size of the hospital and the volume of laboratory work A minimal ratio is 4 square feet of space in the laboratory, including morgue and autopsy room, for each bed in the hospital

4 Equipment for the laboratory
The variety and completeness of laboratory tests performed depends on the size of the hospital In all hospitals there should be facilities for the more common tests in clinical pathology, for study of surgical specimens, and for performance of autopsies In larger hospitals the variety of tests performed should be larger and in hospitals with over 500 beds all recognized laboratory procedures should be available for study and treatment of the patients

5 Autopsy percentage
No institution with a percentage of less than 15 will be approved, and those institutions with percentages between 15 and 40 will be given special scrutiny

6 Examination of surgical specimens
All surgical specimens should be sent to the laboratory for gross examination, and microscopic examinations should be made unless there are general or special reasons not to do so

7 Indices
There should be indices according to the names of the patients and the diagnoses of all surgical and autopsy material Indices of clinical pathology are left to the discretion of the hospital

8 Museum
There should be available fixed anatomic and pathologic specimens for study by the staff in proportion to the size of the hospital Properly filed and indexed color photographs may in part be substituted for museum specimens

9 Library
A reasonably complete library of modern books and recent unbound and bound journals should be available to the hospital and the more commonly used books and journals should be on hand in the laboratory

10 Educational program
The work of the person in training should be supervised Conferences, seminars, journal clubs, and demonstrations should be conducted as frequently as the volume of material and the size of the staff justifies A clinicopathologic conference must be held at least every 2 weeks

11 Volume of laboratory work
(*a*) As indicated in the following categories, no hospitals with less than 75 autopsies, 1000 surgical specimens and 25,000 tests in clinical pathology annually will be approved (Category D) except as outlined in the following paragraphs It is the belief of the board that less material than this is inadequate for the training of a pathologist

(*b*) In the field of clinical pathology, there should be a reasonable diversification of tests and in each category there should be sufficient absolute volume to provide training and experience There are no absolute criteria, but special scrutiny will be given to a hospital in which there is not a reasonable diversification and variety

(*c*) In the field of pathologic anatomy, a deficiency in either autopsies or surgical specimens may be made up by an excess of the other, if the deficiency does not exceed 20 per cent of the minimum required in the ratio of 1 autopsy to 75 surgical specimens Thus in a hospital approved for one year in pathologic anatomy and clinical pathology, the minimums are 75 autopsies and 1,000 surgical specimens If a hospital has 2 500 surgical specimens, it is acceptable if there are only 60 autopsies

If a hospital has met these minimal qualitative and quantitative standards, it will then, on the basis of the following quantitative standards, be approved for 1, 2, 3 or 4 years of training in pathologic anatomy, or clinical pathology, or both or some special field as shown for the number of residents indicated

CATEGORY A In both pathologic anatomy and clinical pathology for 4 years (as required of all candidates seeking certification in both fields who are examined after July 1, 1952)

Minimum 150 autopsies, 1750 surgical specimens, and 65,000 tests in clinical pathology for 4 residents Additional resident for each 50 autopsies or 500 surgical specimens, or 20,000 tests in clinical pathology

CATEGORY B In both pathologic anatomy and clinical pathology for 3 years This meets all requirements of the board for supervised training until July 1, 1952 Candidates examined after that date who seek certification in both subjects must take an additional year of supervised training in clinical pathology or pathologic anatomy, in another hospital, which is approved for the deficiency of training required

Minimum 125 autopsies 1500 surgical specimens, and 50,000 tests in clinical pathology for 3 residents Additional resident for each 50 autopsies, 500 surgical specimens, or 20,000 tests in clinical pathology

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Minimum 100 autopsies 1250 surgical specimens, and 40,000 tests in clinical pathology for 2 residents Additional resident for each 50 autopsies, or 500 surgical specimens, or 20,000 tests in clinical pathology

CATEGORY D In both pathologic anatomy and clinical pathology for 1 year Candidates taking training in these institutions must have an additional 2 years (3 years after July 1, 1952) in institutions which are approved for the deficiency of training required

Minimum 75 autopsies, 1000 surgical specimens and 25,000 tests in clinical pathology for 1 resident Additional resident for each 50 autopsies, or 500 surgical specimens, or 20,000 tests in clinical pathology

Category E In pathologic anatomy only, for 3 or more years Candidates taking all training in these institutions will not be eligible for certification in clinical pathology unless an additional year (2 years after July 1, 1952) is taken in clinical pathology in institutions which are approved for the deficiency of training required

Minimum 175 autopsies and 1500 surgical specimens for 3 residents Additional resident for each 50 autopsies or 500 surgical specimens

CATEGORY F In pathologic anatomy only, for 2 years Candidates taking training in these institutions will not be eligible for certification in clinical pathology unless they take one additional year full time in clinical pathology (2 years after July 1 1952) in institutions which are approved for the deficiency of training required and will be eligible in pathologic anatomy only if another year is taken in another institution which is approved for one or more years in pathologic anatomy

Minimum 125 autopsies and 1250 surgical specimens for 2 residents Additional resident for each 50 autopsies or 500 surgical specimens

CATEGORY G In pathologic anatomy only for 1 year Candidates training in these institutions will not be eligible in both pathologic anatomy and clinical pathology unless they take an additional year in pathologic anatomy and an additional year (2 years after July 1, 1952) in institutions which are approved for these periods of training Candidates seeking certification in pathologic anatomy only must study an additional 2 years in institutions which are approved for that period of training

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Minimum 125 autopsies for 2 residents An additional resident for each 60 autopsies

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Minimum 2000 surgical specimens for 1 resident An additional resident for each 1000 surgical specimens

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Minimum 100 000 tests in clinical pathology for 3 residents Additional resident for each 50 000 tests

CATEGORY M Clinical pathology for 2 years Candidates taking 2 years training in these institutions must take the same additional training as in Category L to be eligible for pathologic anatomy also To be eligible for clinical pathology only, an additional year of clinical pathology must be taken in an approved institution

Minimum 75 000 tests in clinical pathology for 2 residents An additional resident for each 50 000 tests

CATEGORY N Clinical pathology for 1 year Candidates taking training in those institutions must take an additional 2 years in an institution in Category A, B, C, L or M assigned to clinical pathology for eligibility in clinical pathology only To be eligible in pathologic anatomy and clinical pathology, an additional 2 years in approved institutions is required

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CATEGORY P Research Residence in certain institutions in which full time is devoted to research with a direct application to the practice of pathologic anatomy or clinical pathology may be accepted for credit not to exceed one third the time requirement (20 months if no clinical internship 16 months if a clinical internship was taken) The board encourages research and believes that all candidates should carry on investigation during their training in all institutions Therefore this category is only for those wishing to do full time research

AMERICAN BOARD OF PEDIATRICS

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APPLICANTS FOR CERTIFICATES

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(*b*) A maximum of six months credit is allowed for residency training in an approved contagious disease hospital

4 A subsequent term of two years of specialized study or practice or a combination of the two Credit for one year toward this requirement is allowed for military service The maximum credit that any candidate may receive toward the practice requirement for work done prior to the completion of residency training is one year

Attention is invited to the fact that the primary duty of the resident must be the care of patients under supervision if full credit in satisfaction of the residency training requirement is expected Research residencies which involve little or no clinical training are creditable for only three months Research residencies which include significant clinical training may be prorated to a total of six months for a year of service Teaching fellowships may not be offered in lieu of residency appointments

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[1] To avoid misunderstanding, the board advises all candidates to communicate with the office of the executive secretary before entering on training

EXAMINATIONS

Examinations will be held at or near the time and place of meetings of the American Academy of Pediatrics, and at other times and places at the discretion of the board, depending on the number of applicants from any region of the country It is proposed to arrange examinations in different cities so that as little financial burden as possible will be placed on the applicants in meeting the examiners

The purpose of these examinations is to determine the applicant's competency to practice pediatrics This board feels that the best impression of an applicant's ability can be obtained by oral examination, although a written test is also given It precedes the oral examination by an unfixed interval The written examination is given locally under a monitor Case reports are not required The board feels that the clinical and abstract aspects of growth and development are fundamental parts of pediatric training

The application fee is $100

The full fee must be remitted with the application Refund will be made only if the applicant is refused an examination

Applicants who failed an examination become eligible for a second examination after a year has elapsed After a second failure another examination will be permitted in one year The fee for the second and third examination is $50 each

Before becoming eligible for a fourth examination a candidate must serve one year in a full time medical in patient residency in an approved institution He must then reapply as a new candidate and pay a new fee

No financial recompense of any kind is made to any members of the board except to cover traveling expenses to board meetings and examinations

Application must be made on special blanks which may be secured from the executive secretary These should be sent to the executive secretary well in advance of the date on which the candidate expects to be examined At date of publication, lists are filed approximately one year ahead No application will be accepted more than a year in advance of eligibility date

Letters from two competent pediatricians recommending each applicant must be sent to the executive secretary of the board These letters should not accompany the application, but should be sent directly to the executive secretary No member of the board, or official examiner, may recommend any applicant

A list of papers or books published must be sent in with the application blanks

Certificates granted are in no sense degrees, nor do they purport to confer on any person any legal qualification, privilege or license to practice pediatrics Neither does the board intend in any way to limit the activities of any licensed physicians It is merely attempting to standardize qualifications and to issue certificates to those who voluntarily comply with the requirements

INFORMATION ON CERTIFICATION IN ALLERGY BY THE AMERICAN BOARD OF PEDIATRICS

The American Board of Pediatrics, Inc , has established certification in allergy as a subspecialty of pediatrics

Certification in pediatrics by the American Board of Pediatrics is a prerequisite for certification in allergy Those who already hold certificates of the American Board of Pediatrics and who wish to be certified in allergy must make formal application to the executive secretary of the American Board of Pediatrics Those who are not yet certified in pediatrics and who desire certification in allergy as well should indicate this in their application to the board as examination in both subjects may be held at the same time

The application fee for certification in allergy will be $25 in addition to the application fee for pediatric certification

An Advisory Committee of Allergy has been appointed to act with the American Board of Pediatrics in all matters pertaining to the selection and examination of applicants for subspecialty certification This committee is identical with the Advisory Committee on Allergy of the American Board of Internal Medicine

The present members of the committee are

Robert A Cooke, Chairman, 60 East 58th St , New York
Harry L Alexander, St Louis
Leslie N Gay, Baltimore
W C Spain New York
Francis M Rackemann, Boston
Oscar M Schloss, 125 E 72d St , New York (pediatric representative)

The Advisory Committee on Allergy has outlined the requirements for applicants who desire examinations in the subspecialty of allergy as follows

1 Two years, full time, in a satisfactory allergy clinic and its hospital (including training, in both allergy and pediatrics), or

2 One year, full time, in the allergy clinic and its hospital, and two additional years of full attendance on such an allergy clinic and its activities or

3 Five years, full attendance, on such an allergy clinic and its activities or

4 Special training under qualified preceptors, solely or in combination with aforementioned types of training, and such other training as might be felt adequate to prepare an individual for the practice of allergy

The candidate must expect a searching examination in both the theory and practice of allergy This means that they must come prepared to do physical examinations on selected patients take histories do actual skin tests if called upon to do so and interpret them They must be prepared to discuss all details in diagnosis and treatment on the patients that have been assigned to them In addition, they may be called upon to discuss any theoretical question that the examiners may choose to bring up

It is further the opinion of the committee that clinics for such training should fulfil the following qualifications

1 They should be in hospitals that have been accepted by the Council on Medical Education and Hospitals of the American Medical Association and by the American Board of Pediatrics for training and certification in pediatrics and for residencies in pediatrics or medicine

2 The director of the Allergy Clinic shall be a diplomate certified in allergy by the American Board of Internal Medicine, or the American Board of Pediatrics

When accepted the diplomate will receive from the American Board of Pediatrics a certificate in allergy and will be listed as a *specialist in allergy*

Prospective applicants for certification in the subspecialty of allergy may apply to the executive secretary of the American Board of Pediatrics

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Arthur L Watkins, Boston
Robert L Bennett, Secretary Treasurer, 30 North Michigan Ave , Chicago 2

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATON

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards

GENERAL QUALIFICATIONS

A Satisfactory moral and ethical standing in the profession

B Membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association (Exceptions to the foregoing qualifications shall be made by the American Board of Physical Medicine and Rehabilitation for good and sufficient reasons)

PROFESSIONAL QUALIFICATIONS

A Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association

B Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same council

SPECIAL TRAINING

A A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council and by the American Board of Physical Medicine and Rehabilitation as competent to provide a satisfactory training in physical medicine

B This period of specialized preparation shall include (*a*) graduate training in anatomy (including kinesiology and functional anatomy), physics (including radiation physics, electronics and medical instrumentation), physiology, pathology and other basic sciences which are necessary to the proper understanding of physical medicine, (*b*) an active experience of not less than two years in hospitals, clinics, dispensaries and diagnostic laboratories recognized by the Council and the American Board of Physical Medicine and Rehabilitation (*c*) the written and oral examinations, given by the American Board of Physical Medicine and Rehabilitation, shall include questions concerning the basic sciences, clinical practice and laboratory and public health problems as related to physical medicine

C An additional period of not less than two years of study and/or practice in physical medicine

METHOD OF EXAMINATION

Physical Medicine includes the diagnosis and treatment of disease by means of physical agents These physical agents include heat, water, electricity, ultraviolet and infra-red radiation and mechanical devices and agents (such as massage and therapeutic exercise)

Physical Medicine has been termed medical applied biophysics As now practiced the special field of physical medicine includes (1) the employment of physical agents in diagnosis (as in electrical tests for reaction of degeneration or in the cold pressor test), (2) the employment of physical agents in treatment (3) occupational therapy and (4) the physical rehabilitation of convalescent and disabled patients

The physician who specializes in physical medicine must have a thorough knowledge of the basic sciences as related to these subjects as well as clinical practice in the various phases of physical medicine

Written and oral examinations will be given which will assure the board that the applicant is thoroughly grounded in

A The basic sciences including

(*a*) Anatomy (including kinesiology and functional anatomy) Because of the importance of proper knowledge of the function of muscles in conjunction with the administration of therapeutic exercise and physical reconditioning of convalescent and disabled patients the applicant will be carefully examined concerning his knowledge in this field.

(*b*) Physics (including radiation physics electronics and instrumentation) Because physical medicine deals largely with the employment of physical agents in diagnosis and treatment, the applicant will be expected to be well informed concerning the fundamentals of medical physics He will be expected to be familiar with such subjects as the physics of heat, ultraviolet and infra red radiation and electricity (including the physics of low voltage currents and high frequency currents as employed in medicine) Because of the newer developments in medical electronics and medical instrumentation the applicant will be examined concerning these subjects

(*c*) Physiology The applicant will need to know the fundamentals of physiology especially the physiology of movement and the physiologic effects of the various physical agents employed in medicine

(*d*) Pathology A basic knowledge of pathology as related to physical medicine will be required and questions dealing with this subject will be included in the examination

(*e*) Other fundamental sciences The applicant will be examined concerning his knowledge of such subjects as biochemistry and bacteriology as related to physical medicine

B The clinical aspects of physical medicine including

(*a*) Thermotherapy The various clinical applications of heat and cold both locally and generally should be thoroughly familiar to the applicant

(*b*) Hydrotherapy The methods of employing hydrotherapeutic devices and procedures will be covered in the examination

(*c*) Electrotherapy Questions concerning clinical, diagnostic and therapeutic uses of the constant current, interrupted currents, sinusoidal and high frequency currents will be included in the examination

(*d*) Radiation therapy The applicant will be examined especially concerning the diagnostic and therapeutic uses of ultra violet and infra red radiation (Applicants will not be required to answer questions concerning the therapeutic applications of roentgen rays and radium which are not included in the field of physical medicine but in the field of radiology)

(*e*) Kinesitherapy Questions concerning the clinical uses of therapeutic exercise and massage will be included in the examination

(*f*) Occupational therapy The applicant will be expected to answer questions concerning the indications for, and clinical application of, various types of occupational therapy

(*g*) Physical rehabilitation Because of the importance of the understanding of the philosophy of convalescent reconditioning and rehabilitation of the seriously disabled person, the applicant will be expected to have a thorough knowledge of the modern developments in these phases of physical medicine

APPLICATION

The application form shall contain a record of the candidate s premedical and medical training as well as of internships, graduate study, hospital or dispensary staff appointments, teaching positions, membership in medical societies, medical papers published, and the names of three well known physicians to whom the board may write for professional and character references

The application shall also be accompanied by one recent signed photograph of the candidate mounted on the application and the registration and examination fee of $50, which fee will cover both the written and oral examinations (In case of rejection of application, this fee will be refunded with the exception of $10, which will be considered as a registration fee) An additional fee of $25 will be required when the certificate is issued

AMERICAN BOARD OF PLASTIC SURGERY

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Estelle E Hillerick, Corresponding Secretary, 4647 Pershing Ave St Louis 8

REQUIREMENTS

GENERAL QUALIFICATIONS

1 Moral and ethical standing in the profession satisfactory to the board

The board, believing that the practice of 'fee splitting' is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question

2 Those whose activities are limited to the practice of plastic surgery

3 This board will accept as applicants for examination only those who are full citizens of the United States or Canada Notarized statements not original citizenship papers, attesting

C. M. E. Medical College 32779

to the fact of full citizenship in the United States or Canada must be furnished by foreign born applicants when the application is filed Such candidates must have at least two years of practice in plastic surgery in North America after completing the training required by the board

The board considers the requirements outline below to be minimal in attaining its purposes and encourages candidates to take advantage of broadening experience in other fields

Candidates must fulfill the requirements which are in force on the date of their examination

PROFESSIONAL REQUIREMENTS FOR QUALIFICATION

1 Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school considered acceptable by this board

2 Completion of an internship of not less than one year in a hospital approved by the same Council, or what would constitute in the opinion of the board the equivalent of such training

3 Two years of postgraduate work in general surgery beyond the intern year as a resident or an assistant resident in an approved hospital, or a period of training gained elsewhere judged by the board to be the equivalent

4 Training in general plastic surgery in an acceptable residency[1] or preceptorship for an additional period of not less than two years, also be taken in an approved hospital,[1] or under auspices satisfactory to this board

For the time being, it is felt that too few residencies in plastic surgery exist to meet the training needs In certain instances the board will accept in lieu of the two required years training in an accepted approved residency, training in a preceptorship under a fully qualified plastic surgeon, when such preceptorship is properly organized and supervised to give the trainee adequate experience and training in plastic surgery of a well rounded nature Certain established preceptorships are given full approval New preceptorships will be given tentative approval in advance on presentation to the board by the preceptor of a well rounded plan of training In such instances the trainee will be required to keep a detailed record of his experience presenting this to the board at intervals of six months If the preceptorship is found to be adequate in scope, it will be transferred to the fully approved list

5 During these years of training following the internship year, a candidate must hold positions of increasing responsibility for the care and management of patients with surgical conditions When a candidate receives his training in more than one institution, it is equally imperative that he hold positions of increasing responsibility He must have sufficient operative experience to acquire surgical skill and judgment through the performance of surgical operations with a high degree of responsibility, but under circumstances providing adequate opportunity for consultation and advice

6 An additional period of not less than two years of practice in plastic surgery If a candidate elects to spend one or two additional years in approved training in plastic surgery, one year of such training will be credited toward the required two years of private practice if it can be demonstrated that the candidate held a position of increasing responsibility It is imperative that one year be in actual private practice in such instances

The above training may be taken as a resident in surgery and in plastic surgery in an approved hospital, or under a preceptorship offering equivalent training By the latter statement it is meant that one may secure the necessary and specified training as an assistant to an accredited surgeon providing suitable facilities for the education of the candidate are offered

The period of special training should emphasize the relation of the basic sciences—anatomy, pathology, physiology, biochemistry and bacteriology—to the application of surgical principles which are fundamental in all branches of surgery, and especially to plastic surgery In addition, the candidate must understand and be trained in the following subjects the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics and wound healing

IMPORTANT NOTE—The added requirement adopted by the board in July 1949, and which appeared in the Educational Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, September 3, 1949, top of page 81, stating that "After Jan 1, 1953, certification by the American Board of Surgery will be a prerequisite for eligibility for examination by the American Board of Plastic Surgery, has been revoked Certification by the American Board of Surgery is not necessary for those seeking certification by the American Board of Plastic Surgery

Because of vagaries of training, such as changes from one specialty to another, interims of military duty and other service to the country, the aptitude and skill of candidates, the board may, at its discretion, review and make recommendations for or against certification of certain applicants outside of the listed qualifications and requirements

The board reserves the privilege of requesting lists of operations done solely by the candidate for one or more years, or of requesting special and extra examinations, written, oral or practical, and of requesting any specific data concerning the candidate that may be deemed advisable before making final decision for certification

Eligibility rulings or an evaluation of a candidate's qualifications or training cannot be made by the secretary or by any one member of the board Official evaluations of qualifications are made only by the Committee on Credentials and Requirements, or by the entire board where necessary, after a review of the candidate's formal application for such rulings The applicant must allow at least four weeks for such requests to make the rounds of the committee

TRAINING FACILITIES

The American Board of Plastic Surgery, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association and the American College of Surgeons, evaluates training facilities in institutions providing acceptable residencies in plastic surgery Neither the board nor its individual members can be responsible for the placing of applicants for training The board will give no independent approval and will keep no independent list of approved residencies or preceptorships The board will consider those residencies approved by the Council on Medical Education and Hospitals of the American Medical Association as acceptable facilities for training in plastic surgery

It should be kept in mind by all that the primary interest of the board is to encourage well rounded training in plastic surgery with the aim of producing plastic surgeons capable of doing good work in the wide variety of cases which may come under their care The standards set up by the board, both for preliminary general surgery and for specialized plastic surgery training, are established in an effort to further this aim The quality of the training received should be reflected in the candidate's ability to achieve good results in his practice and the examinations of the board are an attempt to judge the ability of the candidate in the specialty of plastic surgery

SUGGESTIONS FOR TRAINING IN PLASTIC SURGERY

A residency in plastic surgery is one in which a hospital appointment for training in plastic surgery is given the trainee In a preceptorship in plastic surgery no such appointment is given

While the board permits flexibility in training, approved residencies and preceptorships should be under fully qualified plastic surgeons Those trained in preceptorships will be judged by the candidate's ability to make the most of his training and to show adequate ability in all phases of the subject

There must be teaching in either a residency or a preceptorship—instruction in the basic sciences and in the basic principles of plastic surgery—if not in actual courses, then by conferences, ward rounds, lectures by men on the service or other services, or by visiting doctors

A resident or assistant resident in plastic surgery should have a full time appointment from an A M A Council approved hospital or hospitals A preceptee does not have such an appointment A residency should preferably be in connection with a teaching hospital having medical school affiliations or be under the Dean's Committee of Veterans Administration hospitals An acceptable residency is one that is approved by the Council on Medical Education and Hospitals of the American Medical Association

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[1] An acceptable residency is one which has been approved by the Council on Medical Education and Hospitals of the American Medical Association

Before training in plastic surgery is begun, the plastic surgeon in charge of the residency or preceptorship should ascertain that the trainee's preliminary training in general surgery meets the requirements of the board, that is two years of residency training in general surgery after the internship year

The training in plastic surgery (at least two years) whether in a residency or a preceptorship, should cover a wide field of plastic surgery, both as to type and anatomical distribution There should be available sufficient material of a diversified nature so that the trainee will be able to pass the examinations of the board after the period of training and the two additional years of private practice If the available material on one service is inadequate, the deficiency should be made up by affiliation with another plastic surgeon on another service so that a broad experience will be obtained in plastic surgery The trainee should be provided an opportunity to operate under the direct supervision of the plastic surgeon in charge, and with increasing ability to be given an opportunity to operate independently on suitable cases under more remote supervision

It would be well for a preceptor to report annually to the board the name and qualifications of any preceptee under his supervision, as well as the work done by the preceptee The preceptee should report to the board every six months the number and type of operations performed both under supervision and independently, giving details of supplementary activities of his training

MILITARY CREDIT

Credit for military service is given on an individual basis, each case being considered on its own merits and the amount of credit allowed is determined by the board when the information is submitted with the application

CASE REPORTS

On approval by the board of a candidate's application for certification, each candidate is required to submit to the board thirty five or more case reports illustrative of his independent work in the field of general plastic surgery These case reports shall conform to conditions which the board may from time to time specify and the case reports must be approved by the board before the candidate is admitted to examination

The thirty five case reports must be of a diversified nature and must be submitted to the office of the board, together with photographs The group must include a variety of material from the entire body rather than a number of cases of one type, and should carry the candidate's personal deductions, conclusions and comments and should be sufficiently detailed to show if the conclusions drawn indicate a grasp of the subject and if the results justify the procedure

Each case report should be typewritten on paper approximately 8½ x 11, separately numbered and paged with the candidate's name on each page Each report should be individually assembled and held by removable fasteners and should have a cover sheet with the candidate's name, the number of the case, hospital number, diagnosis and a brief summary of the case (not over 100 lines) The case reports, photographs and other data are to be filed with the permanent records of the board

Cases should be chosen from the private practice of the candidate or from the hospital or clinic service The initials, color, age and occupation of each patient should be stated, as should the name of the hospital where treated and dates of admission, operation and discharge The important details of family history, if relevant, and of the previous history should be given The history of the condition for which the patient consulted candidate should be stated clearly and concisely, indicating previous treatment, if any, and the mental, social or economic factors involved The physical examination of the patient with special reference to the existing deformities should be carefully described All laboratory and other special examinations, such as roentgenograms which were made, should be reported, with a statement of what was determined by them The indications for operation and for the type of operation employed should be given, and the preliminary treatment and the type of anesthesia used should be stated A full description of the operative technic with methods of hemostasis, suture and drainage, if any, and the name of the assistant should be given The late and early postoperative course and results should be described Photographs of conditions and drawings of operative technic, illustrative of each case should be included and securely attached to each case report, with the name of the candidate and the number of the case indicated Before and after photographs should be shown, and all photographs should be made by a sharp focus lens from untouched negatives with identical lighting conditions, exposure and developing, and should show conditions before and after operation with clear detail

If the case reports, and lists of operation when requested, are approved, the candidate will receive subsequent information regarding taking the examinations The board at its discretion may request certification of case reports by the hospital where the operations were performed The following form should accompany the case reports I hereby certify that the planning and essential surgical procedures described herein were carried out by me as an independent operator'

A candidate should remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his ability

EXAMINATIONS

The qualifying examinations are divided into two parts, the written examination, and the oral and practical examinations

The examinations are given twice yearly, in the spring and fall The spring examination is given immediately preceding, during or following the annual meeting of the American Association of Plastic Surgeons (usually in May), and the fall examination is given immediately preceding, during, or following the annual meeting of the American Society of Plastic and Reconstructive Surgery (usually in October) Candidates are required to go to the designated center for the qualifying examination, which lasts three days These centers will be the city in which the meetings of these two organizations are held if the proper clinic and hospital facilities are available, otherwise in some nearby city where such material is available Arrangements for all examinations are made by the Examintion Committee

The written examination will consume all of the first day and half of the second day The oral and practical examination will consume the afternoon of the second day and all of the third day The subjects of the written examination are (1) theory and practice of plastic surgery, (2) applied anatomy, applied physiology, (3) pathology, bacteriology, clinical laboratory methods, pharmacology, (4) reaction of tissue to injury, surgical accidents, anesthesia

A general oral examination pertaining to plastic surgery will be given In the practical part of the examination, the examiners will present a group of patients for examination by the candidates, and the candidates will be quizzed on methods of procedure—diagnosis, treatment, technic, and so on Slides of preoperative conditions will be shown on a screen and the candidate asked to make a quick diagnosis of the items and tabulate in the order of their importance and methods of treatment Microscopic slides of the average pathological tissue falling within the province of the plastic surgeon will be given the candidates on which they will be asked to write a description and diagnosis

Either prior to or following the examination, the candidate will be visited at his place of practice by a member or members of the board to observe him operate and to examine a number of his pre and postoperative cases

To be considered as passing, the candidate will be required to receive a grade of at least 65 per cent in each portion of the written examination and an average of 75 per cent on the entire written and oral examination

REEXAMINATIONS

Candidates who have failed in any portion of the examination may be admitted to another examination after one year, or within three years, except in such cases as the board may for good and sufficient reason deny a candidate the privilege of reexamination The candidate must give sixty days notice requesting a reexamination and pay a fee of $25 00 for the written reexamination and $25 00 for the oral and practical examination The examiners conducting the first examination will not be eligible to conduct the reexamination

FEES

The fee for application and examination is $150 Of this sum, $25 must accompany the application and the remaining $125 must be paid when the candidate is notified of acceptance for examination There will be no refunds This fee may be increased at the discretion of the board The board is a nonprofit organization and the fees of candidates are used solely for defraying the actual expenses of the board The members of the board serve without remuneration Because of the limited number of surgeons certified by this board it is necessary for a while to request a voluntary annual prorata contribution from diplomates after the first year's certification to defray expenses of the board

CERTIFICATOIN

After a candidate has met the requirements for eligibility and passed the examinations of the board, a certificate attesting his qualifications in plastic surgery will be issued to him by the board, signed by its officers, and having the seal of the board affixed thereto It shall be the prerogative of the board to determine the fitness professionally and ethically of any candidate for its certificate, and the action or decision of the board regarding the certification of any candidate shall be final

The board is in no sense an educational institution and the certificates of the board are not to be considered as degrees Therefore the certificate does not confer on any person legal qualifications, privileges, or license to practice medicine or the specialty of plastic surgery The board does not purport in any way to interfere with or limit the professional activities of any licensed physician nor does it desire to interfere with any practitioners of medicine in any of their regular or legitimate activities

The American Board of Plastic Surgery has never been concerned with measures that might gain special privileges or recognition for its certificants in the practice of plastic surgery It is neither the intent nor has it been the purpose of the board to define requirements for membership on the staffs of hospitals The prime object of the board is to pass judgment on the education and training of broadly competent and responsible plastic surgeons—not who shall or shall not perform plastic surgical operations The board specifically disclaims interest in or recognition of differential emoluments that may be based on certification

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH

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GENERAL QUALIFICATIONS

1 Good moral character and high ethical and professional standing

2 Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association, or from a foreign medical school satisfactory to the board

3 An internship of at least one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association or in a foreign hospital satisfactory to the board

4 Licensure to practice medicine in the United States or the Dominion of Canada

5 Special training in preventive medicine or public health which shall include

- (a) A period after internship of not less than six years of special training, teaching or practice in preventive medicine and public health which must include (b) and (c) Credit for training and experience in preventive medicine and public health while on military duty will be considered on an individual basis depending on type of service
- (b) Successful completion of at least one academic year of graduate study leading to the degree of Master of Public Health or an equivalent degree or diploma or an equivalent satisfactory to the board
- (c) Residency[1] (after internship) of at least two years of field experience in general public health practice which included planned instruction, observation and active participation in a comprehensive, organized public health program, one year of which may be an approved clinical residency in a field directly related to public health

6 Limitation of practice to full time teaching or practice of preventive medicine or public health as a specialty

7 Membership in appropriate medical and specialty associations The American Medical Association, the American Public Health Association

APPLICATIONS

Each application for examination must be made on the prescribed form (which may be obtained from the secretary) and be accompanied by the required documentation, and must be filed with the secretary, ordinarily not less than ninety days prior to the date of the examination The application must be accompanied by an application fee and two recent, clear, unmounted, autographed photographs of the applicant, one of which should be attached to the application and the other unattached

FEES

The fee for application and examination is $90, payable as indicated below, additional fees are payable for reexamination

Application fee, $15 No application will be considered unless accompanied by the application fee The application fee is not refundable

Certification fee, $75 This fee is payable when the candidate is notified of acceptance for examination or reexamination, and, if paid prior thereto, is not refundable after such notification has been given No member of the board is authorized to give informal opinions as to the eligibility of the candidates The determination of eligibility will be made only by the board after receiving full application information Each candidate must comply with board regulations in effect at the time the examination is taken, and also those in effect at the time the certificate (if any) is issued, regardless of when the original application was filed An applicant declared ineligible for admission to examination may refile or reopen his application on the basis of new or additional information within two years of the filing date of his original application without payment of an additional application fee Applicants declared eligible but who fail to exercise the examination privilege within three years of the filing of the application are required to file a new application and to pay a new application fee

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[1] Approval of residency training is in the process of development by the Council on Medical Education and Hospitals of the American Medical Association in cooperation with the American Public Health Association Until such time as an adequate program of residency is developed field training will be evaluated on an individual basis Information as to approved residencies may be obtained from the Council on Medical Education and Hospitals or from the secretary of the board

EXAMINATIONS

Examinations will be held from time to time and in various places depending on the need as indicated by applications received It is expected that examinations will be held primarily in connection with the meetings of the American Public Health Association For the convenience of military personnel assigned overseas the board will try to provide for special individual examinations at times when such officers are temporarily returned to the United States The examination consists of two parts

Part one is a comprehensive written examination designed to test the knowledge of the applicant in the general field of preventive medicine and public health

Part two is an oral or practical examination which will usually be held on the day following the written examination An endeavor will be made to adapt the details of the oral examination to each candidate s experience and practice The examiners will report on each candidate to the assembled board, by which the results of the examination will be considered

REEXAMINATION

Candidates failing the first examination taken may, upon timely request, be admitted to a second examination within eighteen months following the examination failed, upon payment of an additional fee of $15 If the candidate fails the second examination, a period of eleven months must elapse before admission to a third examination A fee of $25 is required for admission to the third examination Candidates failing three examinations will not be admitted to any subsequent examinations unless the board so directs

CERTIFICATION

On satisfactory completion of the examination and proof to the satisfaction of the board that the applicant is eligible for certification, a certificate will be issued to the effect that the person named has been found to be possessed of special knowledge in preventive medicine and public health The certificate will be signed by the officers of the board and shall have its seal affixed Each certificate remains the property of the board, but the person to whom it is issued shall be entitled to its possession unless and until it is revoked Any certificate issued by the board may be revoked if evidence, satisfactory to the board is presented that the applicant was not eligible to receive it at the time of examination or issuance, or that he misstated, misrepresented or concealed any pertinent fact, or that his license to practice medicine has been suspended or revoked, or that he has ceased to be engaged in the teaching or practice of preventive medicine or public health as a specialty The issuance of a certificate to any person does not constitute such person a member of the board

AMERICAN BOARD OF PROCTOLOGY

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TYPES OF CERTIFICATION

An application for certification is a voluntary act. Two types of certification will be offered until Jan 1, 1955 Certificates will be issued (1) to those who fulfil requirements for certification as specialists in the diagnosis and treatment of anorectal diseases exclusive of those conditions which require surgical operation within the abdomen and those which require radical operation for malignant diseases of the rectum, and (2) to those who fulfil requirements for certification as specialists in the diagnosis and treatment of anorectal and colonic diseases It is important to repeat that the essential difference between the two types of certification is that diplomates of the first type will not be certified to administer treatment which requires surgical operation within the abdominal cavity nor to perform radical operations for malignant diseases of the rectum, while diplomates of the second type will be certified to administer such treatment or perform such operations After Dec. 31, 1954, the first type of certification will be discontinued

QUALIFICATIONS

This board does not intend to interfere with any practitioner of medicine in his legitimate activities but wishes only to certify, in so far as possible, to the public that physicians who claim to be specialists in proctology possess proper qualifications Suitable evidence of such qualifications can be obtained only if a physician can satisfy this board concerning his training and can thereafter pass examinations required for certification

Article VIII of the by-laws of the American Board of Proctology, which follows, is quoted verbatim, in order that there will be no doubt in the minds of applicants whether their qualifications meet the standards of the board

ARTICLE VIII APPLICATION FOR CERTIFICATES

Section 1 Each application for a certificate shall be filed with the secretary on the prescribed form and shall be accompanied by the designated fee It shall also be accompanied by an unmounted autographed recent photograph of the applicant and by names of two proctologists acceptable to, but not members of the board, who may be referred to for information in regard to the applicant

Section 2 General qualifications which the applicant must possess

(*a*) High ethical and professional standing
(*b*) Authorization to practice medicine in the country, state, territory or province of his residence
(*c*) Membership in the American Medical Association or the corresponding medical association of the country in which he resides
(*d*) One year of internship in a hospital acceptable to the Council on Medical Education and Hospitals of the American Medical Association, following completion of a four year course in a Class A medical school

Section 3 Special qualifications for applicants who desire certification in anorectal surgery only (this type of certification does not include operations within the abdominal cavity or radical surgical operations for malignant disease of the rectum and will be discontinued after Dec 31, 1954)

(*a*) A period of three years graduate training, after internship, in clinics, dispensaries, hospitals or laboratories approved by the Council on Medical Education and Hospitals of the American Medical Association and the American Board of Proctology as competent to provide satisfactory training in proctology and the principles of general surgery This specialized training shall include graduate training in the basic sciences according to the standards prescribed by the Council on Medical Education and Hospitals of the American Medical Association and by this board In individual instances credit may be granted for work done in preceptorships approved by this board and also for military service
(*b*) An additional period of not less than two years of training or practice limited to proctology
(*c*) Evaluation of examinations which shall include the basic medical sciences and the clinical, laboratory and public health aspects of proctology

Section 4 Special qualifications for applicants who desire certification in both anorectal and colonic surgery

(*a*) A period of five years' graduate training after one year of internship Three years of this period shall have been spent in training in general surgery and the basic sciences in clinics, dispensaries, hospitals and laboratories approved by the Council on Medical Education and Hospitals of the American Medical Association and the American Board of Proctology Two years additional training as a full time resident in proctology shall be acquired by the applicant in proctology In individual instances, credit may be granted for work done in general surgery or proctology in preceptorships approved by this board, and also for military service (*b*) This training shall be evaluated further by examination which shall include the basic medical sciences as well as the clinical, laboratory and public health aspects of abdominal, intestinal, rectal and anal surgery

Section 5 Those applicants who have been graduated from a Class A medical school for more than ten years and who wish certification in anorectal surgery only shall be required to submit to the American Board of Proctology satisfactory evidence of training and experience in proctology, together with evidence of superior achievement in the ethical practice of this specialty They shall furthermore be required to pass suitable examinations in the subject and to submit, if thought advisable by the board, hospital case reports or demonstrate their competency to representatives of the board This method of certification shall terminate Sept 3, 1951

MILITARY CREDIT

Physicians who were on active duty in the armed forces for one year or more and who entered the service prior to Aug 15, 1945, will be given one year of credit The board may allot additional credit if the candidate furnishes evidence of suitable surgical service under acceptable supervision No credit in excess of two years will be allowed

APPLICANTS TRAINED IN FOREIGN COUNTRIES

Applicants must hold a license to practice medicine or surgery in the country in which they reside or hold citizenship, and they must have fulfilled all other requirements

GENERAL REQUIREMENTS

1 All candidates shall comply with current regulations of the board regardless of the time of filing applications The secretary is not permitted to make decisions as to requirements These rulings are made by the Committee on Standards and Requirements or by the board after reviewing the candidates' formal applications

2 All candidates shall have limited their practice to proctology

3 Application forms shall be filled out completely and accurately It is to the advantage of the applicant to supply letters of endorsement

4 A fee shall be remitted in the following manner Twenty-five dollars with the application blank and when the candidate is notified that he is acceptable for examination, he shall remit the examination fee, which is $150 for candidates in proctology and $100 for candidates in anorectal surgery

5 All candidates shall appear personally before the board

6 All candidates shall submit to the required examinations

7 Applicants may be requested to deliver to the board a record of all patients hospitalized during the year prior to the date of submission of his application Each record shall be endorsed by an appropriate official of the hospital and must include dates of admission and discharge from the hospital, the diagnosis, treatment and result

8 Candidates shall submit a bibliography of papers and books published

EXAMINATIONS

Part I shall consist of written and oral examinations covering the theory and practice of proctologic surgery, applied anatomy and physiology, pathology, bacteriology, clinical laboratory methods, and allied subjects

Part II shall consist of a clinical examination including (1) examination of patients, (2) gross and microscopic pathology and (3) roentgenologic interpretation

The examinations will be held at times and places which will be determined by the board and will be announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION All applications must reach the office of the secretary at least sixty days prior to the time set for the examination and all candidates who are eligible will be notified at an appropriate time

GRADES AND REEXAMINATIONS

An average of 75 per cent is the minimum grade which will be acceptable to the board for certification of a candidate

If a candidate should fail in Part I, he will be required to wait one year before he may be reexamined

If a candidate should pass Part I and fail Part II, he must wait a year before being allowed a reexamination in Part II

If a candidate should fail the reexamination in Part I or Part II, he will be required to submit a petition to the board With such a petition, the candidate must submit satisfactory evidence of further substantial preparation The board may approve of another reexamination or it may deny such privilege

A fee of $50 will be charged for the second reexamination in Part I or Part II

CERTIFICATION

A certificate which attests to the candidate's qualifications will be awarded to those who have met the requirements for eligibility and have passed the examinations with a grade of 75 per cent or better

Each diplomate shall be required to pay a fee of $10 annually to the board for a period of ten years following the year of his certification

The certificate granted by the board does not confer on any physician legal qualification, privilege or license to practice proctology Neither does it limit the activities of any licensed physician It attempts to standardize qualifications and to issue certificates to those who comply voluntarily with the requirements Probably the greatest value of the certificate lies in the fact that it provides the medical and lay public a partial measure whereby they may select physicians who are well qualified in this specialty

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APPLICATION FOR CERTIFICATES

An application, in order to be considered at any meeting of the board, must be in the hands of the secretary of the board not less than ninety days before the date of such meeting. A proper application form may be obtained from the secretary Application may be made for certification in psychiatry or in neurology or in both fields Applications will be formally considered only when made on the official application blank in such form as may be adopted from time to time by the board and when accompanied by an application fee in such amount as may be fixed by the board

The secretary of the board, on receipt of an application, shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate s record from the biographical records of the American Medical Association, after which he shall forward the application to the Committee on Credentials This committee shall consider the application and other information available and notify the secretary whether the application is accepted The certification of a candidate in either psychiatry or neurology, or both shall be approved by a majority of the members of the entire board at a meeting held for such certification

FORM OF CERTIFICATION

There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields The certifications shall be in such form as is approved by the Board of Directors

GENERAL REQUIREMENTS FOR APPLICANTS

Each applicant for a certificate must establish that

(*a*) He is a physician duly licensed by law to practice medicine

(*b*) He is of acceptable ethical and professional standing (*c*) He is now a member of the American Medical Association or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association Exceptions to the foregoing may be made at the discretion of the board for good and sufficient reasons

(*d*) He has received adequate training in psychiatry or neurology, or both, as a specialty

CLASSES OF APPLICANTS

Class A—Applicants who graduate from an approved medical school before the foundation of the board (1934) will not be held to the strict interpretation of the published requirements in formal graduate training Under such circumstances the board will consider the training and experience of the applicant and decide whether or not he will be admitted to the examination

Class B—Applicants who graduated from an approved medical school after 1934 shall fulfil the following requirements

PROFESSIONAL EDUCATION

1 Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association In the case of an applicant whose training has been received outside the United States and Canada, such training must be satisfactory to the aforementioned Council

2 Completion of a year s internship approved by the same Council in general medicine, general surgery, pediatrics or a rotating internship

3 The nine month wartime internships will be accepted as an equivalent of one year

SPECIALIZED TRAINING

Admission to the examination for certification in psychiatry or neurology requires a total of five calendar years of training and experience, three years of which must be specialized training obtained in approved training centers plus two years of experience Admission to the examination for certification in both psychiatry and neurology requires a total of six calendar years of training and experience, five years of which must be specialized training obtained in approved training centers, plus one year of experience The specialized training may be subdivided into two and one half years each in psychiatry and neurology or three years in one subject and two years in the other The required years of experience should be spent in clinical practice with major responsibility for the care of patients

This training for psychiatrists should include clinical work with psychoneurotic and psychotic patients, combined with the study of basic psychiatric sciences medical and social psychology, psychopathology psychotherapy and the physiological therapies, including a basic knowledge of the form, function and pertinent pathology of the nervous system This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients Mere factual knowledge is not sufficient This training period should include instruction in the psychiatric aspects of general medical and surgical conditions and the behavior disorders of children and adolescents sufficient to develop practical ability to direct the treatment of such conditions It should also include collaborative work with social workers, clinical psychologists, courts and other social agencies The training program of the candidate for certification in psychiatry should include sufficient training in neurology to enable him to recognize and to evaluate the evidences of organic neurological disease

The training for neurologists should be based on clinical work with adults and children with neurological disorders including the neurological complications of medical and surgical conditions This shall be combined with study of basic neurological sciences neuroanatomy neurophysiology neuropathology and neuroroentgenology This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients Mere factual knowledge is not sufficient. This training should include sufficient training in psychiatry to enable the candidate to recognize and to evaluate the common psychiatric reactions.

The board offers the foregoing two paragraphs as an outline of desirable training If however, the candidate has evidence of equivalent qualifications of training and experience not in the pattern here formulated, this experience with appropriate documentary support may be included in his application for evaluation and possible approval by the board

Candidates seeking certification in both neurology and psychiatry or supplementary certification in one after being certified in the other must submit evidence satisfactory to the board of an additional two years of full time basic training in the supplementary specialty

Thus, no candidate is eligible for examination by the board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate or at least six years of special training and experience in neurology and psychiatry for certification in both neurology and psychiatry

The board will give not more than six months of credit for not less than six months of training in an approved training center for internal medicine or pediatrics in lieu of six months of experience to candidates for the certificate in psychiatry or neurology, but not to candidates for certification in both psychiatry and neurology

The board will give credit for one year of training in child psychiatry provided it is the third year of the required three years of special training required by the board and providing it is taken in a center approved by this board for training in child psychiatry

The lists of training programs approved by this board and by the Council on Medical Education and Hospitals of the American Medical Association may be found in the current issue of the Educational and Internship and Residency numbers of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

The secretary may at his discretion admit to examination candidates who lack not more than two months of the time requirement for certification with the understanding that the certificate will in no case be issued until satisfactory written evidence of completion of this requirement is submitted to the board

TRAINING IN THE ARMED FORCES

Credit will be granted for one year of wartime military service in the Army, Navy, Public Health Service and Veterans Administration Wartime to this board means Dec. 7, 1941 to Feb 15, 1946 Further credit for specialized training will be granted only if the candidate has received training in an institution recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by this board Time beyond one year spent in the above government agencies may be credited to experience providing the candidate has been regularly assigned to a service in neurology or psychiatry

EXAMINATIONS

Date and places of examinations are set by the board at its discretion and shall be announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Diseases* and in the *Archives of Neurology and Psychiatry*

The examinations are designed to test the competence of the candidates The board requires some proficiency in neurology on the part of those it certifies in psychiatry, and vice versa, but examines the candidate in accordance with the certificate he seeks The examinations will be of such type that no adequately trained person will fail and yet they will be sufficiently searching so that the specialist in fact may be separated from the specialist in name The practical examination will include the examination of patients under the supervision of the examiner The manner of examining patients and the reasoning and deductions therefrom, will constitute an important part of the examination Oral and practical examinations will be given in the basic sciences with special regard to their clinical implications Written examinations may be given at the discretion of the board The examination for certification in psychiatry will differ from the examination for certification in neurology

PAYMENT OF FEES

The candidate on filing his application shall accompany it with an application fee of $25 which is not returnable If a preliminary written examination has been decreed, an additional $25 fee will be required at the time of the applicant s acceptance. When notified by the secretary that he is eligible for the oral and practical examination, the candidate shall send to the secretary an examination fee of $50 A candidate who has been certified in either psychiatry or neurology and who has been admitted to supplementary examination for the other certificate shall pay an additional examination fee of $50

A candidate who has failed in one examination is eligible for reexamination within one year on payment of a reexamination fee of $25 After the year has elapsed he must submit a new application and pay new application and examination fees If he fails the reexamination, he may, after two years have elapsed, submit a new application and $25 fee, present evidence of further training and pay an examination fee of $50

A candidate who fails in one or two subjects is eligible for reexamination in those subjects within one year on payment of a reexamination fee of $25 After the year has elapsed he must submit a new application and pay new application and examination fees and repeat the entire examination If he fails the reexamination, he may apply again for the complete examination after two years on submission of evidence of further training and on payment of an application fee of $25 If admitted to the examination, he must pay a new examination fee of $50

Any candidate who finds himself unable to attend an examination to which he has been admitted and does not notify the *secretary at least six weeks before the date of the examination* will forfeit half of his examination fee Any candidate who fails to appear for examination within a period of three years following the date of notification of eligibility for examination shall be required to submit a new application and pay the attendant fee If a candidate dies before his certificate is issued, all fees will be returned to his estate

AMERICAN BOARD OF RADIOLOGY

I H Lockwood, President, Kansas City, Mo
Douglas Quick, Vice President, New York
Ralph S Bromer, Bryn Mawr, Pa
Ray A Carter, Los Angeles
D S Childs, Syracuse, N Y
A H Dowdy, Los Angeles
Ross Golden, New York
E L Jenkinson, Chicago
H Dabney Kerr, Iowa City
F W O'Brien, Boston
J W Pierson, Baltimore
U V Portmann, Cleveland
Leo G Rigler, Minneapolis
B P Widmann, Philadelphia
B R Kirklin Secretary Treasurer, 102-110 Second Avenue S W, Rochester, Minn

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board

A certificate granted by this board does not of itself confer or purport to confer, any degree, or legal qualifications, privileges or license to practice radiology Certificates of the board shall be issued on one of two forms

1 A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches

2 A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields (*a*) roentgenology, (*b*) diagnostic roentgenology, (*c*) therapeutic radiology

3 A certificate to the effect that the applicant has been found qualified to practice radiological physics in all of its branches

4 A certificate to the effect that the applicant has been found qualified to practice radiological physics in one or more of the following special fields, (*a*) x-ray and radium physics, (*b*) medical nuclear physics

DEFINITIONS

For the purposes of this board, the following definitions are adopted

1 Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium

2 Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays

3 Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays

4 Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays, radium and radioactive isotopes

5 Radiological physics is that branch of physics which deals with the medical application of roentgen rays and the radiations from radioisotopes, nuclear reactions and particle accelerators.

6 X-ray and radium physics is that branch of radiological physics which deals with roentgen rays and radium

7 Medical nuclear physics is that branch of radiological physics which deals with radioisotopes, nuclear reactions and particle accelerators

GENERAL REQUIREMENTS

Each applicant for admission to the examination for a certificate in radiology shall be required to present evidence that he has met the following standards

GENERAL QUALIFICATIONS

1 Satisfactory moral and ethical standing in the profession

2 A license to practice medicine in the state or county in which he resides

3 Membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association Except as herein provided, membership in other societies shall not be required

4 That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under "definitions," and that he devotes his time primarily and principally (at least 75 per cent) to the practice of radiology or one of its branches

5 That he is a citizen of the United States or Canada Candidates from other countries must be permanent residents of that country and native citizens thereof

GENERAL PROFESSIONAL EDUCATION

1 Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association If the applicant is a resident of the United States or one of its possessions and is a graduate of a medical school outside the United States or Canada, he must have a certificate of the National Board of Medical Examiners

2 Completion of an internship of not less than one year in a hospital approved by the same Council

SPECIAL TRAINING

1 After completion of the internship there shall be a period of special training in radiology of not less than three years in clinics, hospitals or dispensaries recognized and approved by the American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in radiology This period of specialized training shall include

(*a*) Graduate training in pathology, radiation physics and radiobiology A period of six months full time training in pathologic anatomy is recommended but where this is not possible to arrange, the student during his three year training period may, by attending pathologic conferences, postmortem examinations and studying removed tissues receive adequate training in pathology It is recommended that radiation physics be taught by a combination of didactic lectures, practical examples and direct clinical demonstrations

(*b*) An active experience (residency) of not less than twenty four months in an institution, the radiologic department of which is recognized and approved by the American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as capable of providing satisfactory training

(*c*) Examination in the basic sciences of radiology as well as the clinical aspects thereof These examinations should be given by the student's instructors in order to allow those responsible for his training to certify to the board that he is adequately prepared

APPLICATION

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologic literature, his membership in medical societies and his local and general reputation

For this purpose, application must be made on a special blank which may be obtained from the secretary No application will be considered unless made on the regular application blank This application shall be forwarded with the required data, two unmounted photographs and the fee of $75 at least two months before the date of the examination

FEE

A fee of $75 must accompany each application blank This fee will not be returned, and no application will be considered until the fee is received This fee has been carefully computed and is used entirely for administrative purposes Members of the board and special examiners do not receive any compensation except for actual expenses connected with holding the examinations As the number of candidates decreases, it may become necessary to raise the fee

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America

For the present, examinations consist of practical and oral examinations, although written examinations may be added later The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty The board will endeavor to adapt this examination to the candidate's experience and years of practice It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical application of roentgen rays radium and radioactive isotopes The applicant is also examined in 'professional adaptability,' in an attempt to ascertain his attitude toward his fellow practitioners and his patients

Whenever an applicant fails to pass the examination the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies

REEXAMINATIONS

If the candidate fails in the first examination he will be admitted to a second examination after one year has elapsed but not more than three years He must give ninety days' notice of his intention to appear for reexamination and pay an additional fee of $35 If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $75

A candidate having failed twice may, after one year has elapsed, file a new application which must be accompanied by the fee of $75

AMERICAN BOARD OF SURGERY

Warren H Cole, Chairman, Chicago
Calvin M Smyth, Vice Chairman, Philadelphia
Lawrence Chaffin, Los Angeles
Clarence E Gardner Jr Durham, N C
Peter Heinbecker, St Louis
Thomas H Lanman, Boston
Leland S McKittrick, Boston
Robert M Moore, Galveston, Texas
John H Mulholland, New York
John D Stewart, Buffalo, N Y
John M Waugh Rochester, Minn
J Stewart Rodman, Secretary-Treasurer 225 S Fifteenth Street, Philadelphia

GENERAL QUALIFICATIONS

1 Moral and ethical standing in the profession satisfactory to the board

The board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question

2 Those whose activities are limited to the practice of surgery This includes diagnosis, preoperative and postoperative care It does not include obstetrics without surgical complications, or the general practice of medicine

PROFESSIONAL STANDING

1 Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school considered acceptable by the board

2 Completion of an internship (straight or rotating) of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board, such as a year of study devoted to a single branch of medicine

SPECIAL TRAINING

The board considers the requirements outlined to be minimal in attaining its purpose, and encourages candidates to take advantage of broadening experience in other fields

Group I In addition to one year of internship or its equivalent, a candidate must have a minimum of four years of training in surgery in an institution or institutions acceptable to the board Three of these years must be spent in an approved residency or clinical fellowship One year may be spent in a surgical specialty, or experimental surgery or research, or work of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology, biophysics and biochemistry to surgery is emphasized If the second year of a two year internship is surgical and is an integral part of a four-year graded training program, it will be acceptable to the board

During these four years of training a candidate must

1 Hold positions of increasing responsibility for the care and management of patients with surgical conditions

2 Have sufficient operative experience to acquire surgical skill and judgment through the performance of surgical operations with a high degree of responsibility but under circumstances providing adequate opportunity for consultation and advice

Group II The board realizes that there is not as yet an adequate number of four year graded residencies (Group I) to meet the needs of the country for qualified surgeons Therefore, the board will continue to recognize three years [1] of residency training in an institution or institutions acceptable to the board followed by two years of study or practice of surgery, during which time sufficient operative experience to meet the board's requirements must be obtained The latter two years must be taken under the supervision of a surgeon certified by or acceptable to the board, and carrying on his practice in hospitals approved as meeting the minimum hospital requirements of the American College of Surgeons Not more than two of the five years required by Group II applicants may be spent in the subspecialties of surgery

BASIC SCIENCES

The board does not insist that any special length of time be spent in the basic sciences, but knowledge of these sciences as applied to clinical surgery will be required in the examination In both groups I and II, as much as one year's credit, however, will be given to recognized graduate school courses in these basic sciences if such courses are an integral part of an acceptable university medical school, but only in Group II is this applicable to the three years of residency required The board will not, however, give credit for any post graduate course of less than six months duration

At the completion of training, the board will request responsible representatives of the institutions in which the candidate has had the major portion of his training to attest to his character and professional competency, and to recommend that he be admitted to its examinations This requirement is applicable to candidates in both groups

Approval will be given for experience obtained in institutions having training programs of less than three years only when such a program is affiliated with and forms an integral part of an approved graded residency

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[1] When a candidate receives his training in more than one institution, it is imperative that he hold positions of increasing responsibility

MILITARY CREDIT

Candidates who were on active duty in the armed forces for one to two years and who entered these services prior to V-J Day (Aug 15 1945) will be given one year military credit Subsequent to Feb 15, 1946, credit for military service will be given on the same basis as in civilian training as described elsewhere Credit for military service may be applied to the residency requirements as outlined for Group II candidates, but military credit is not allowed for Group I candidates

REQUIREMENTS FOR FOREIGN BORN AND FOREIGN TRAINED APPLICANTS

Full citizenship status is required of residents of the United States United States citizens who are residents of other countries, and citizens of other countries must have completed at least the three year residency training requirements in a hospital in the United States In addition they are required to hold a license to practice surgery in the country in which they are resident or hold citizenship

APPLICATIONS

Prospective candidates considering themselves eligible for examination should submit a letter to the board's office outlining briefly, in concise and chronological order, their qualified training since graduation from medical school If the prospective candidate's letter appears to meet the minimum requirements, an application form will be mailed to the candidate for completion The processing of the completed application by the board's office and the Examination Committee requires a minimum of three months The candidate will then be notified by the secretary as to his acceptability for examination, his deferment or ineligibility

The eligibility of candidates whose training in some respects does not conform to requirements published above will require the action of the Examination Committee which may postpone the candidate's notification of acceptability Every candidate's final acceptability for examination is based not only on the evaluation of his training qualifications, but on recommendation by the board's advisors as to his professional ability as a surgeon, his ethical standing in the community and the strict limitation of his work to surgery

THE FOUNDERS GROUP

The Founders Group, to which were admitted those who had already amply demonstrated their fitness as trained specialists in surgery was closed in January 1940

EXAMINATIONS

The qualifying examination will be divided into Part I (written) and Part II (clinical, bedside and laboratory) In both of these parts, as previously stated, a knowledge of the practical application of the sciences fundamental to surgery will be required

Part I This examination will be given simultaneously in as many centers throughout the country as the board may determine suitable for the purpose, and is held twice a year, in the spring and fall All applications must be on file in the board's office at least three months in advance of the examination Candidates who are declared eligible are given ample notice as to the center to which they have been assigned for examination

The examination in Part I is written and covers a one day period There shall be two sessions of three hours each The examination concerns itself primarily with general surgical problems and in addition the application of the basic sciences of surgery to these problems

Part II The board may, at its discretion, require that a satisfactory operative report be filed before a candidate is eligible for Part II Such a report shall be made by a member of the Board Founders Group, or one certified by examination, designated to be present during a major operating procedure performed by the candidate

Part II of the examination shall be oral and practical and cover a one day period the schedule being arranged somewhat as follows

9 A M-1 P M—Clinical surgery (diagnosis, management and the application of physiology, biochemistry and bacteriology, as the case being examined on may offer an opportunity for doing so Roentgenographic interpretation will also be included)

2 5 P M—Applied Anatomy and Surgical Pathology

The board expects that every candidate shall be well prepared in applied anatomy and in surgical pathology In the latter subject more stress is laid on the diagnosis of gross specimens than on the recognition of microscopic pathology

Examinations in Part II are conducted in certain centers of the country selected by the board It is the board's desire to arrange these centers so as to geographically meet the needs of the candidates, on condition that suitable examination facilities can be provided Examinations in Part II are conducted by members of the board living in the region of the country in which they are held, together with selected members of the Founders Group resident in the centers chosen

GRADES

A candidate must receive an average of 75 per cent for each part to be entitled to the board's certificate

A candidate who fails in his examination in Part I shall have his papers reviewed by the Examination Committee

REEXAMINATIONS

Part I Candidates who fail Part I are required to wait one year before becoming eligible for reexamination

Part II Candidates who fail Part II in its entirety and those who fail in the single subject of clinical surgery are required to wait one year before establishing eligibility for reexamination Those who fail either anatomy or pathology are required to wait six months The board expects that during this period the candidate will make a reasonable effort to prepare himself in the subject or subjects in which he has failed

Should a candidate fail one examination in parts I and II further examination privileges will be decided in each individual instance by the Examination Committee, but only after the candidate has submitted satisfactory evidence of further substantial preparation The board may, for good and sufficient reason deny a candidate the privilege of further reexamination

FEES

The fee for the examination is $100, payable as follows $10 registration fee, $30 for Part I and $60 for Part II

Candidates shall be required to pay a fee of $30 for reexamination in Part I and $60 for reexamination in Part II

This board is a nonprofit organization All fees will be used, after a reasonable amount is set aside for necessary expenses, to aid in improving existing opportunities for the training of the surgeon The members of the board serve without remuneration

CERTIFICATION

After meeting the requirements for eligibility and passing the examination a certificate attesting to a candidate's qualifications in surgery will be issued by the board, signed by its officers

The board has discharged its responsibilities by conducting examinations and has issued certificates of qualification to those surgeons who have met certain clearly specified educational requirements and have successfully passed its examinations. In discharging its responsibilities, the primary purpose of the board has been to establish and maintain desirable standards in the education and training of the young surgeon

The American Board of Surgery has never been concerned with measures that might gain special privileges or recognition for its certificants in the practice of surgery It is neither the intent nor has it been the purpose of the board to define requirements for membership on the staffs of hospitals The prime object of the board is to pass judgment on the education and training of broadly competent and responsible surgeons not who shall or shall not perform surgical operations The board specifically disclaims interest in or recognition of differential emoluments that may be based on certification

BOARD OF THORACIC SURGERY

(An Affiliate of the American Board of Surgery)

CARL EGGERS Chairman, New York
CAMERON HAIGHT, Vice Chairman, Ann Arbor Mich
WILLIAM E ADAMS, Chicago
FRANK E BERRY, New York
BRIAN B BLADES, Washington D C
THOMAS H BURFORD, St Louis
MICHAEL E DEBAKEY Houston, Tex
EMILE HOLMAN, San Francisco
GEORGE H HUMPHREYS New York
RICHARD HARWOOD SWEET, Boston
WILLIAM M TUTTLE, Secretary Treasurer, 1151 Taylor Avenue Detroit 2 Mich

FUNCTIONS OF THE BOARD

1 To select Founder Members This group is composed of surgeons who have made meritorious contributions to thoracic surgery, as follows

(*a*) Active and senior members of the American Association for Thoracic Surgery, who have been certified by the American Board of Surgery, are eligible for consideration as Founder Members

(*b*) Other surgical members of the American Association for Thoracic Surgery will have their records reviewed by the board and may be recommended for Founder Membership with or without application

(*c*) Other surgeons, certified by the American Board of Surgery, who on application, and after review of their qualifications, are found to meet the requirements of the thoracic board

The Founders Group is now closed

2. To conduct examinations of satisfactory candidates who seek certification by the board

3 To improve the opportunities for the training of thoracic surgeons

4 To set up principles of education to guide young surgeons who desire to prepare themselves for proficiency in thoracic surgery

5 To issue certificates of qualification to all those meeting the board s requirements

REQUIREMENTS

1 Certification by the American Board of Surgery

2 Two years' training in thoracic surgery approved by the Board of Thoracic Surgery, or meritorious contributions to thoracic surgery One of these two years may be spent during the four years of training in surgery required by the American Board of Surgery

3 Written, oral and practical examination

DEFINITION

To qualify for the examination in thoracic surgery, the candidate shall have had two years of training in an active well integrated thoracic surgical clinic or clinics, or the equivalent amount of thoracic surgical training, on a mixed service consisting of thoracic and nonthoracic surgical cases Adequate training in both the tuberculous and nontuberculous aspects of thoracic surgery is expected In order to obtain this objective combined residencies between institutions of different types may be advantageous It is also required that the candidate be familiar with the basic sciences as related to thoracic surgery Under exceptional circumstances certain surgeons may, by virtue of recognized proficiency in the surgical treatment of thoracic diseases, qualify for the examination at the discretion of the board

APPLICATIONS

Prospective candidates desiring to apply for examination should consider whether they are able to meet the minimum requirements of the board They should then submit a letter to the secretary s office, outlining briefly their training and experience in thoracic surgery and ask for an application form An application form will not be sent unless evidence is submitted in a letter indicating that the prospective applicant appears to meet the minimum requirements

EXAMINATIONS

The Board of Thoracic Surgery will be governed in general by the rules laid down by the American Board of Surgery pertaining to examination as well as reexaminations

Rules may be changed however at the discretion of the Board of Thoracic Surgery

FEES

Founders Group To those who will be admitted to this group, a certificate will be issued The fee will be $50

Group to be certified by examination For the special examination in thoracic surgery and the issuing of a certificate the fee will be $100 Fifteen dollars of this fee is to accompany the application and will be considered as a registration fee It is nonreturnable to the applicant in case he is disapproved for examination

Reexamination The fee for reexamination will be $25

AMERICAN BOARD OF UROLOGY

Gilbert J Thomas, President, Beverly Hills Calif
George F Cahill, Vice President, New York
Charles C Higgins, Cleveland
Grayson Carroll St Louis Mo
A I Dodson, Richmond, Va
Edgar Burns New Orleans
Thomas D Moore, Memphis, Tenn
Roger Graves, Boston
Harry Culver Secretary-Treasurer, Chicago
Office of the Secretary-Treasurer 30 Westwood Road Minneapolis 16

EMERITUS MEMBERS

William F Braasch, Rochester, Minn
Herman L Kretschmer, Chicago
T Leon Howard, Denver
Clarence G Bandler, New York
George Gilbert Smith, Brookline, Mass

APPLICATION BLANK REQUIREMENTS FOR ALL APPLICANTS

Application for certification must be made on a special form This will be provided by the secretary and must be returned to him accompanied by other required data and credentials, and by $50 of the examination fee

Requirements for Applicants —Each applicant, before he shall become eligible to take the examination for certification in urology, must

A Have graduated from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association and must have completed an internship of not less than one year in a hospital approved by the same council (The former requirement is not applicable to a candidate who graduated from an institution now extinct, or whose graduation occurred before the American Medical Association had prepared a list of accredited medical schools) All graduates of foreign medical schools must obtain a license to practice in the state or province in which they reside, the certificate of the National Board of Medical Examiners and/or the certificate of graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association as capable of providing training comparable with that recognized in a ' Class A" medical school

B Establish in a manner satisfactory to this board that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing and that he has received adequate special training in urology

The board is attempting to increase and to standardize the facilities for urological training in teaching institutions, so that the expression special training in urology may be interpreted to include

1 A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of urology

The training requirements after the internship may be fulfilled in one of the following ways

(*a*) A three year residency in urology

When a resident obtains a senior rating or is in his final year of training, he should be in charge of the examination and treatment (surgical or otherwise) of an ample number of patients under the supervision of the senior consultant or attending urologist who must be a certificatee of the American Board of Urology

(*b*) A second year of rotating internship or a one year residency preferably in general surgery followed by a two year urologic residency which should have the same status as the last two years of a three year urologic residency

(c) Preceptorship

This type of training may be accepted but it is not encouraged

This and other variations from training described above, must be supported by evidence that the candidate has had training comparable with one of the two preceding types of residencies

2 An additional period of not less than two years in the practice of urology in the city from which he makes application

These special requirements conform with the suggestions made by the Council on Medical Education and Hospitals of the American Medical Association

After June 30, 1955, training requirements, after the internship, may be fulfilled in one of the following ways

1 One year general surgery Three years formal training in urology

2 Two years of general surgery Two years formal training in urology

3 One year of general surgery One year review of basic sciences or some special research Two years of formal training in urology

4 One year general surgery Two years of formal training in urology One year of credit for two years in a preceptorship, to be approved by the Credentials Committee and the board

C Make application to the American Board of Urology, whose duty it shall be to investigate the applicant s credentials and make a survey of his character

D Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged

E Membership in the American Medical Association or comparable national medical association is recommended

FEE

The examination fee is $150 (This fee will be increased when the expense of the examinations and other activities of the board demand) Fifty dollars must accompany the application If, on investigation, an applicant is found lacking in any of the requirements stated above, he will be notified that he is ineligible for examination One hundred dollars must be paid when the applicant is accepted as a candidate for certification Neither fee shall be returnable in any event

If a candidate fails he will be permitted a second examination after one year or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination After an applicant has failed twice, he must file a new application and pay a second fee

REQUIREMENTS FOR CERTIFICATION

According to the by laws of the American Board of Urology, applications received from applicants for certification shall be examined by the Credentials Committee and reviewed by the board When additional data are required to complete the application, these will be requested by the secretary

The requirements for certification include preparation of reports of twenty-five representative (not necessarily consecutive) major urological cases from private cases which must contain all items essential for diagnosis therapy, prognosis, results of treatment and so on, oral-clinical examinations written examinations and personal appearance before the board

In specific instances, the board may waive any part of these requirements, with the exception of the item of personal appearance

Each candidate will receive a notice of the time and place of the examinations, and an appointment for his personal appearance before the board

EXAMINATIONS AND REPORTS OF CASE HISTORIES

The board will hold one examination per year This may be held in association with the annual meetings of the American Urological Association or the American Medical Association, when this is practicable, or at other times and places that the board may select, or deem expedient

The written examinations are designed to test the candidate's preparation in, and his knowledge of the whole field of urology, including the fundamental subjects pathology, anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology These may be given at the time of the oral-clinical examination or may be held on certain dates simultaneously in different parts of the country at places convenient for candidates The examination in pathology will consist of the identification of gross specimens and of sections of tissue observed through the microscope The examination in anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology will be a test of the candidate's working knowledge of these subjects as they are related to the practice of urology

The oral-clinical examination will consist of discussions of common urological conditions The subjects forming the basis of this examination are urography, diseases of the genital organs including the prostate, diseases of the urinary bladder and diseases of the ureters and kidneys The examination may deal directly with data found in the reports of case histories that the candidates have submitted It will ascertain the candidate s familiarity with recent literature, the breadth of his clinical experience and his general qualifications for practice in the specialty of urology

The professional adaptability of each candidate will be investigated in an attempt to determine his ethical conduct and his attitude toward his patients and fellow practitioners

The reports of twenty five major urological cases must be representative cases from private practice The reports must be typewritten on 8½ by 11 paper and in duplicate, but need not be on any special form

Complete index lists must accompany the reports If they are obtained from more than one hospital they must be consecutive and a separate index list of each group should be provided These lists must state the operator s name at the head of each page, the name of the patient, the hospital and admission number and the dates of operation Statements from the superintendents of the hospitals attesting that the candidate was the operator *must be included* With the twenty five case reports there must also be an index, in consecutive order, of all major and minor urological surgery done during the last two years of practice The lists should be filed in the secretary s office for verification purposes

The data should be placed under proper headings and the arrangement of these should conform to the sequence of events incidental to the patient's admission to the hospital or clinic, the examinations made and treatment prescribed

Sufficient data should appear in these so that the examiner will know that a proper history was taken and that a thorough examination, including a complete physical survey, was made

The board requires that all of the essential points of the history and examination, as well as a complete description of the surgical procedure, shall be given Emphasis should be placed on the following items preoperative diagnosis, clinical and pathological diagnosis, laboratory data, including cultures of urine and chemical analysis of calculi, summary of postoperative course with special reference to morbidity, clinical findings at time of discharge from the hospital and subsequent follow up reports

A final short paragraph *must be prepared* for each case This must include the candidate's interpretation of the history in terms of pathology the basis for the diagnosis, the facts that determined the treatment prescribed, whether surgical or otherwise, the course of treatment to be pursued following discharge from the hospital or clinic, a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment

Each candidate must assume personal responsibility for the data in his case reports including autopsy findings and interpretation of urograms

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his competence as a urologist

The deadline for the receipt of case histories each year is September 1

Satisfactory case reports must be submitted before a candidate will be permitted to continue with other parts of his examination If case reports are pronounced unsatisfactory by more than one examiner, the candidate will be informed of this and requested to prepare others

LIMITATIONS OF FUNCTIONS OF THE BOARD

The conferring of degrees, 'Doctor of Medicine" or "Bachelor of Medicine" remains with the universities, where it belongs This board makes no attempt to control the practice of urology by license, or legal regulation and in no way interferes with or limits the professional activities of any duly licensed physician

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ANNUAL REPORT ON INTERNSHIPS AND RESIDENCIES

The Council on Medical Education and Hospitals presents in this issue its twenty-fifth Annual Report on Internships and Residencies This report summarizes data on approved programs in 844 hospitals conducting intern training and in 1,120 hospitals offering residency training in the specialties The report with lists of approved hospitals is appearing at this time rather than in the spring as in years past to provide more current information to prospective applicants at the time they are seeking appointments

Two innovations have been made this year in the lists of approved internships and residencies In addition to the geographical list of hospitals approved for intern training, the Internship and Residency Number this year presents a classification of internships by type of service rotating, mixed, straight or special The residency section has also been enlarged to include a geographical list of hospitals approved for residency training together with a résume of the specialties for which each hospital is approved These changes have been made to provide more ready reference to and additional information about the internship and residency programs approved by the Council

The Council now approves residencies in 28 specialties and subspecialties In internal medicine approval is extended jointly by the Council, the American Board of Internal Medicine, and the American College of Physicians, in general surgery, programs are approved by the Council, the American Board of Surgery, and the American College of Surgeons In both of these major specialties, a Conference Committee on Graduate Training has been established with representatives from the three organizations concerned, to cooperate in a joint program for evaluation and approval of residency training in these specialties

Data submitted by hospitals conducting residency training reveals that there has been a marked increase during the past year in the number of residency positions that were unfilled In the annual report for 1950 there were 1,179 positions reported vacant This year the number of vacancies rose to 4,869 That this trend will be continued is considered inevitable in view of an anticipated decrease in the number of available applicants and the continued need for physicians by the military services

The Council expresses its appreciation for the wholehearted support received from hospitals conducting graduate training programs for providing the statistical information and other data on which the report is based The Council also acknowledges the essential contributions made by many other groups and organizations in carrying out the approval program and in making the annual report possible The Council has enjoyed particularly the cooperation of the specialty boards, the American College of Physicians, the American College of Surgeons, medical schools, and medical departments of the federal services

ANTIBIOTIC ANTAGONISM

The introduction of a wide variety of active chemotherapeutic agents has led to the use of combinations of two or more of these agents in the hope of securing additive or even synergistic effects Clinically effective combinations include dihydrostreptomycin and aureomycin in brucellosis and paraaminosalicylic acid and dihydrostreptomycin in tuberculosis Such combinations not only may offer an increased antibacterial effect but also may delay the appearance of drug-resistant organisms

Recently considerable experimental evidence has been presented to indicate that under certain circumstances antimicrobial agents may, when combined actually have an antagonistic action Thus Lankford and Lacy[1] studied the in vitro bacteriostatic action of aureomycin-penicillin and aureomycin-streptomycin mixtures on staphylococci and concluded that synergistic, additive, indifferent or antagonistic effects could be obtained, depending on the relative concentration of the two drugs Spicer[2] also demonstrated in vitro an interfering effect between certain antibiotics and concluded that, if an antibiotic to which a bacterial strain is only moderately sensitive is combined with one of high activity, the action of the latter may be impeded A more searching study of antagonisms has been undertaken by Jawetz and his associates at the University of California[3] These investigators have shown that under certain conditions aureomycin terramycin, chloramphenicol, and sulfadiazine are antagonistic toward penicillin, both decreasing its early bactericidal action in vitro and interfering with its therapeutic effect in experimental infections in mice Antagonism could not be demonstrated, however, if the concentration of the interfering drug was either too low to affect the test organism or sufficiently high to be strongly bactericidal, if penicillin was present for more than a few minutes prior to the addition of the interfering drug, or if excessive doses of penicillin were used Furthermore, they found that the effect was unilateral, penicillin failing to antagonize the action of the other four antibacterial agents These investigators suggest that antagonism is due to the fact that the interfering drugs modify the characteristics of the bacterial population so as to make it less sensitive to penicillin action Since penicillin is active only against actively growing micro-organisms, it is readily conceivable that bacteriostatic concentrations of these antimicrobial agents would lessen the effectiveness of penicillin On the other hand, a synergistic effect could be anticipated if agents such as bacitracin or streptomycin, which are active against nonproliferating organisms, were combined with penicillin While no evidence of the phenomenon of antibiotic antagonism has as yet been reported in the treatment of human infections, Jawetz and his associates express the hope that awareness of its possible occurrence will induce physicians to observe more carefully patients receiving combinations of chemotherapeutic agents

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[1] Lankford C E and Lacy H In Vitro Response of Staphylococcus to Aureomycin Streptomycin and Penicillin Texas Rep Biol & Med 7 111 1949

[2] Spicer S Bacteriologic Studies of the Newer Antibiotics Effect of Combined Drugs on Microorganisms J Lab & Clin Med 30: 183 1950

[3] Jawetz, E Gunnison J B and Coleman V R The Combined Action of Penicillin with Streptomycin or Chloromycetin on Enterococci in Vitro Science **111** 254 1950 Jawetz, E and Speck R S Joint Action of Penicillin with Chloramphenicol on an Experimental Streptococcal Infection of Mice Proc Soc Exper Biol & Med **74** 93 1950 Gunnison J B Coleman V R and Jawetz, E Interference of Aureomycin and of Terramycin with Action of Penicillin in Vitro Proc Soc Exper Biol & Med **75**: 549 1950 Jawetz E Gunnison J B Speck R S and Coleman V R Studies on Antibiotic Synergism and Antagonism The Interference of Chloramphenicol with the Action of Penicillin A M A Arch Int Med **87** 349 (March) 1951 Gunnison J B Speck R S Jawetz, E and Bruff J A Studies on Antibiotic Antagonism The Effect of Sulfadiazine on the Action of Penicillin in Vitro and in Vivo Antibiotics and Chemotherapy **1** 259 1951 Speck R S Jawetz, E and Gunnison J B Studies on Antibiotic Synergism and Antagonism The Interference of Aureomycin or Terramycin with the Action of Penicillin Infections in Mice, A M A Arch Int Med **88** 168 (Aug) 1951

THE MATCHING PLAN FOR THE APPOINTMENT OF INTERNS

The Council on Medical Education and Hospitals in its Annual Report in this issue calls attention to the matching plan for the appointment of interns, which has been adopted as the official method for making intern appointments for the year 1952-1953 The plan is sponsored by the National Interassociation Committee on Internships This committee is comprised of representatives from the Council, the Association of American Medical Colleges, the American Hospital Association, the Catholic Hospital Association, the Protestant Hospital Association, and liaison representatives from the Medical Departments of those federal services that conduct intern training programs

After the successful results of a trial run last year, the plan has been put into effect for appointments to internships beginning in 1952 Essentially, it is a method by which the student's hospital preference and the hospital's rating of the applicant are matched through a central office Participation in the plan is on a voluntary basis, both for the hospital and the student It is anticipated, however, that both the large majority of hospitals approved for intern training and nearly all students applying for appointment will participate this year Agreements are entered into by both the hospital and the student committing them to the acceptance of the results of the matching procedure, if they enter the program

The matching plan assures the applicant of the opportunity for making an unhurried decision as to the hospitals of his choice and will eliminate for the hospital the last-minute confusion in clarifying the status of its applicants It provides a fair and impartial method for the appointment of interns and should be given wholehearted support by all hospitals approved for intern training

ADVISORY COMMITTEE ON INTERNSHIPS

Two recent developments regarding intern training are of direct interest to all hospitals conducting internship programs In its report in this issue, the Council states that, in the future, approval for intern training will be granted annually, and will include the number and types of internships for which the hospital is approved To implement the policy for this year, the Council had announced on June 30 a quota basis for the appointment of interns Although the latter program was subsequently deferred, the Council has strongly urged all hospitals to cooperate on a voluntary basis in appointing interns for next year in accordance with the provisions of the quota plan In the report announcement is also made of the appointment of an Advisory Committee on Internships, with representatives from the profession, from medical education, from the major clinical divisions, and from the field of hospital administration This committee is studying the whole question of intern training in its broadest aspects

The revisions in the Council's previous policy of internship approval and the establishment of a formal committee to make a full study of the internship program point up the fact that the internship today is in a state of flux and that intern training is in need of reclarification and redefinition as to its purpose and content That there will be significant changes in the present concept of the internship during the next few years seems certain

PHYSICIAN'S HANDBOOK

The Connecticut State Department of Health has made available to the physicians of the state a Physician's Handbook, which contains in convenient form information that every physician should know relative to the requirements of the state laws and the sanitary code regulations Reportable diseases are listed Information is given concerning their periods of incubation and their periods of communicability, and suggestions are made as to minimum control measures Legal requirements are set forth dealing with the commitment of the mentally ill, the reporting of births and deaths, the necessity of prenatal and premarital examinations, and other duties imposed by law on physicians This handbook also lists the services that are made available by the state department of health Physicians in Connecticut should find this handbook of great value Medical associations in at least two states, Indiana and Wisconsin, devote annually special issues of their journals to discussions of the requirements imposed by law on physicians This is a service that can be commended

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

In my travels as President of the American Medical Association, I have been telling and retelling the A M A story—not only to physicians but to persons I have met on trains and planes to newspaper reporters and to radio announcers Our Association has a proud history, and it daily performs vital services for physicians and for the public This story needs to be told, because the public and many physicians as well, have little understanding of what the A M A is and does

One of my favorite topics of conversation is the work of our Association in evaluating drugs and therapeutic and diagnostic devices Before the turn of the century many worthless drugs and secret remedies were promoted with false or exorbitant claims Since uniform standards for drugs were lacking and regulatory laws were inadequate the physician often had difficulty in selecting remedies on which he could rely To provide physicians with much-needed information on drugs, the A M A in 1905 set up a Council on Pharmacy and Chemistry

The general purpose of the Council was and is, to evaluate drugs to and report to the profession on their reliability, proven therapeutic value, and limitations As might be expected, the ethical pharmaceutical companies welcomed the new Council's scrutiny of their products and praised the A M A for this drug evaluation service The not-so-ethical firms were equally loud in their denunciation The new Council however, proceeded with its work in such a careful and scrupulously fair manner that within a few years Council acceptance was much sought after by the majority of manufacturers

The Council still follows the method of procedure it adopted in the beginning A firm wishing Council acceptance of a product must submit specimens of the drug for laboratory examination, evidence in support of proposed claims and certain other technical information

The Council office submits all this information together with data from its own files to a member of the Council or a consultant who is an authority in the field of the particular product He prepares a report on the drug sometimes with the assistance of a staff consultant This report together with the firm's presentation, is included in the biweekly Council Bulletin, which goes to all 18 members Each of them individually considers the evidence and sends to the Council Secretary his comments and any additional information he may have on the product A symposium of members opinions is then carried in the next Bulletin, at which time they ballot on the product A three-fourths majority vote is necessary for acceptance, or the Council may vote to withhold acceptance pending a change in advertising receipt of additional information or for other reasons

The manufacturer is informed immediately of the Council s vote If the product is acceptable, he may then use the Council s Seal of Acceptance in his advertising following certain specified rules for its use In case of rejection, the manufacturer may request reevaluation of the product at a later time

Once a drug is accepted a monograph describing its actions and uses is published in The Journal and is later included in "New and Nonofficial Remedies, ' the Council s annual authoritative book on drugs Acceptance reports are also carried in many leading pharmaceutical publications

Because of these widely-published reports and because The Journal and many other scientific journals advertise only Council-accepted drugs, the A M A Council on Pharmacy and Chemistry wields powerful voluntary influence in encouraging the ethical promotion of drugs While the Council itself does not conduct active campaigns against all worthless drugs, it does investigate many and issues public reports exposing their fraudulent or valueless nature

The Council established a Committee on Research which has played a valuable role in coordinating many special drug research projects It also supervises the granting of certain A M A funds for research

The pioneer Council on Pharmacy and Chemistry served as a pattern for the establishment in 1925 of the A M A Council on Physical Therapy later to become the Council on Physical Medicine and Rehabilitation This Council evaluates therapeutic and diagnostic devices following much the same procedure for acceptance or rejection as the Council on Pharmacy and Chemistry

Because of the increasing importance of the field of physical medicine and rehabilitation, the Council will, within the next few months, set up a physical laboratory at A M A headquarters for improved testing of devices It has also recently added a full-time physician-Secretary to an executive staff composed of a noted physicist and a physician who will direct the new laboratory

In addition to evaluating therapeutic and diagnostic devices, the Council (1) encourages the development of facilities for training more physiatrists occupational therapists, and physical therapists, (2) evaluates clinical methods employed in rehabilitation centers and health resorts, and (3) promotes research in biophysics as related to therapeutic and diagnostic devices

The physicians who serve as members of these two Councils give freely of their time and effort We of the profession owe a debt of gratitude to these men who so truly live up to the motto of the Council on Pharmacy and Chemistry, "Not for Ourselves but for Medicine

One way in which we can further their good work guard the welfare of our own patients, and support ethical manufacturers—all at the same time— is to use Council-accepted products in our practices

If we receive no more from our A M A dues than this service in evaluating drugs and devices, with its regulatory effect in both fields we would be getting an excellent return

John W Cline, M D, San Francisco

ORGANIZATION SECTION

INTERNSHIP APPOINTMENTS

The Council on Medical Education and Hospitals has approved the official Co operative Plan of Internship Appointments sponsored by the National Interassociation Committee on Internships A schedule of dates in 1951 and 1952 for first year internships for 1952 1953 is published below for the information of students and hospitals participating in the plan

1 Sept 15, 1951 Hospitals and federal services participating return signed agreements and details on internships offered

2 Oct 15, 1951 Directory of internships offered by participating hospitals and federal services distributed

3 Nov 1, 1951 Seniors return agreements to participate

4 Nov 1, 1951 through Jan 7, 1952 Period for students to make application for internships to hospitals and for medical schools to send to hospitals letters of recommendation and credentials for their seniors The student should file a copy of his application with the dean s office, as well as one directly with the hospital The office of the dean will send his copy of the student application along with credentials and letters to the hospital before Jan 8, 1952

5 Jan 7, 1952 Closing date for senior to mail to the central office his confidential rank order list of the internships for which he has applied The list should be submitted as early as the senior has definitely made up his mind about his exact rank order of the hospitals to which he is applying

6 Jan 15, 1952 through Feb 1, 1952 Student is sent for verification a confirmation copy of his confidential rank order list of internships for which he has applied

7 Feb 1, 1952 Each hospital and federal service is sent an alphabetical list of students who report having applied for each type of internship offered

8 Feb 15, 1952 Closing date for hospital or federal service to return its list with each student rated (Early return of these forms is desirable)

9 March 14 1952 The results of the plan are sent to hospitals and federal services and students

10 March 14 31 1952 Appointments are confirmed by students with hospitals or federal services

11 March 18, 1952 Should any participating student not be matched by the plan, he will be informed of internship vacancies, and hospitals and federal services will be sent a list of available students Individual negotiation will then be in order between the hospitals or federal services and these students

MODEL COMMUNITY SURVEY ON CHRONIC ILLNESS

The Commission on Chronic Illness has just published a Model Community Survey to serve as a guide for individual communities taking inventory of existing facilities and services in connection with a chronic disease program Communities all over the nation are taking steps to solve the growing problem of how best to provide for long term patients Many have already made thorough studies of the local problems and are planning programs based on the facts revealed The 81 page survey publication includes a comprehensive outline of programs, services and facilities that might be surveyed—the types of health and welfare activities that some day could be molded into one co operative community chronic illness program

Copies of this survey may be obtained from the Commission on Chronic Illness, 535 N Dearborn St, Chicago 10, for $1 The Commission, now an independent national agency, was founded by the American Hospital Association, American Medical Association, American Public Health Association, and American Public Welfare Association The present chairman of the Commission is Leonard W Mayo, New York

PRESENT CONGRATULATIONS TO NATIONAL BROADCASTING COMPANY

On Sunday, September 23, during a broadcast on a nation wide network of the National Broadcasting Company the network was formally presented with a resolution of congratulations on the 25th anniversary year of the National Broadcasting Company The resolutions passed by the House of Delegates at the Annual Meeting of the Association in Atlantic City, in June 1951, were presented by Dr W W Bauer Director of the Bureau of Health Education The citation was accepted for the network by Niles Trammell, chairman of the board of the National Broadcasting Company

The action of the House of Delegates was prompted by the long record of cooperation in health education by radio between the National Broadcasting Company and the American Medical Association, beginning with weekly health talks in 1933 and including such dramatized series as Doctors at Work, Doctors at War,' Doctors at Home,' 'Medicine in the News" and other annual series carried from 1935 through 1949 During the past two years the network has also contributed facilities for special documentary programs on industrial health school health, atomic medicine, and diabetes

The occasion of the presentation was another documentary broadcast on Sunday, September 23, from 10 30 to 11 p m Eastern Daylight Time Entitled Worthy of His Hire, the program was prepared in cooperation with the President s Committee for Employment of the Handicapped affiliated with the United States Department of Labor It was a plea for understanding of and employment of handicapped workers

FEDERAL MEDICAL LEGISLATION

Armed Forces Reserve

Representative Brooks of Louisiana introduced H R 5277, *relating to the reserve components of the Armed Forces of the United States*

After weeks of hearings, the House Armed Services Committee has written this bill, which seeks to amend the laws pertaining to the reserve components of the military services The 74 page bill attempts to equalize the obligations placed on reservists by providing that after three years of satisfactory service in the Ready Reserve a reservist would be placed in a Standby status on application and protected against further obligation to serve unless a national emergency is declared by Congress A total of eight years of combined Ready and Standby Reserve service is demanded of all eligible persons Looking toward the inauguration of a universal military training program, this means that, after six months of basic training, men would be required to serve for a minimum of three years in the Ready Reserve during which time the President could order them into active service in an emergency After the third year in the Ready Reserve if application for release is made, persons would be transferred to the Standby Reserve where only Congress after declaring a national emergency, could order them involuntarily into service for the remaining five years of their total eight year term The Secretary of Defense is required to designate an assistant secretary whose principal responsibility shall be all reserve affairs of the department The bill also provides that there shall be no discrimination between and among members of the regular and reserve components in the administration of laws applicable to both regulars and reserves

This bill brings up to-date the provisions of H R 4667 and H R 4860, by the same author and on the same subject

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The summary of federal legislation was prepared by the Washington Office of the American Medical Association

MEDICAL NEWS

CALIFORNIA

Lane Medical Lectures —These lectures on proteins and enzymes will be delivered by Kaj Ulrik Linderstrøm Lang Ph D director of the Carlsberg Laboratory Copenhagen Denmark at 8 15 p m in Lane Hall, Stanford University School of Medicine San Francisco The schedule is as follows

Oct 2 Micromethods in Biological Research
Oct 4 Distribution of Enzymes in Tissues and Cells
Oct 8 Initial Stages in the Breakdown of Proteins
Oct 10 Enzymatic Breakdown of Ovalbumin
Oct 12 Synthesis of Proteins in Vivo

Annual Medical Surgical Institute —The San Joaquin Valley Regional Medical and Surgical Institute of the California Medical Association will hold its second annual session Oct 4-5 at the Hotel Californian in Fresno This is one of the five regional conventions sponsored by the California Medical Association in its postgraduate program Speakers are as follows

Paul A Gliebe San Francisco Differentiation of Organic and Functional Complaints
Marcus Krupp San Francisco Essential Office Laboratory Procedures
Hilliard J Katz, San Francisco Current Concepts in Diagnosis and Treatment of Rheumatic States
Edwin J Wylie San Francisco Obliterative Diseases of Blood Vessels
Lewis F Ellmore Los Angeles Treatment of Burns
Orville F Grimes San Francisco Injuries of the Abdominal Viscera
Lewis F Morrison San Francisco Common Infections of the Ear Nose and Throat
Edmund W Overstreet San Francisco Recent Developments in Office Gynecologic Treatment
Donald R Smith San Francisco Differential Diagnosis of Urological Signs and Symptoms

ILLINOIS

Annual Health Resort Lecture Series —The second annual North Shore Health Resort lecture series on emotional reactions to stress will be given at the health resort the first Wednesday of each month from October through June (second Wednesday in January) All physicians are invited The program through December is as follows

Oct 3 Lewis L Robbins Topeka Kan Failure and Frustration
Nov 7 Francis J Gerty Chicago Acute Illnesses
Dec 5 Vladimir G Urse Chicago Chronic Illnesses

General Practice Course —The Illinois Academy of General Practice and the five medical schools in Chicago are sponsoring a postgraduate course beginning Oct 10 and continuing through Nov 14 resuming Jan 9 and running through April 23 The lectures will be for two periods of two hours per week Registration closes Oct 1 The fee for members of the academy is $35 for nonmembers $75 The lectures will be held in Chicago Belleville Herrin, Alton Danville Peoria Bloomington Joliet and Rockford The curriculum will include gastroenterology chest diseases and urology, surgery pediatrics gynecology obstetrics and endocrinology medicine and dermatology eye ear nose and throat For information address Dr A I Doktorsky chairman Education Committee Illinois Academy of General Practice 7107 S Jeffery Ave Chicago

Chicago

Narcotic Violation —Dr Gilbert H Wynekoop 4900 Sheridan Rd was convicted in the United States District Court at Chicago of violation of the federal narcotic law and on Aug 14 was sentenced to a term of two years

Grants for Research —Seven grants totaling $15 100 have been awarded by the Hematology Research Foundation 72 E 11th St for investigations in leukemia and other blood diseases Michael Reese Hospital scientists received grants totaling $8 100 Stritch School of Medicine of Loyola University was given $1 500 Dr Steven O Schwartz of the Hektoen Institute for Medical Research of the Cook County Hospital $2 000 Mount Sinai Hospital $1 500 and Lenox Hill Hospital New York $2 000

Percy Research Foundation —The Nelson M Percy Research Foundation honoring the chief of staff of Augustana Hospital has been created by the hospital directors and by colleagues of Dr Percy who has been associated with the hospital throughout his 50 years of practice He is also senior attending surgeon at St Mary of Nazareth Hospital and is professor emeritus of clinical surgery at the University of Illinois

KANSAS

Appoint Acting Dean —Dr Edward H Hashinger professor of medicine and gerontology was appointed acting dean of the University of Kansas School of Medicine Kansas City, effective Sept 1 succeeding Dr Franklin D Murphy who resigned as dean to become chancellor of the university After returning from military service in World War I Dr Hashinger was appointed to the faculty of the school of medicine in 1921 During World War II he organized the 77th evacuation hospital unit and served as its executive officer and medical chief through the campaigns in North Africa and Italy He was then assigned as chief of the medical service at Crile General Hospital (U S Army) Cleveland

KENTUCKY

Centennial Meeting of State Society —The Kentucky State Medical Association will hold its centennial meeting in Columbia Auditorium Louisville Oct 2 4 The scientific program is made up entirely of Kentucky born or Kentucky educated physicians who have distinguished themselves beyond the borders of the state Out-of state speakers include the following

Reuben B Chrisman Jr Miami Fla Doctors Are Citizens Too
W Gayle Crutchfield Charlottesville Va Unilateral Upper Extremity Pain
Drew W Luten St Louis Physiological Considerations in Treatment of Congestive Heart Failure
Otho C Hudson Hempstead L I N Y Treatment of Fracture of Neck of Femur
Leonard D Heaton San Francisco Recent Observations on Frostbite
Fred P Helm Austin Texas Infant Mortality as Related to the Three Leading Causes of Death
William R Wilson New Haven Conn Coeliac Disease
Hugh G Jeter Oklahoma City Why Anemia?
Elbert DeCoursey Washington D C Human Injury from Atomic Explosion
Harry Beckman Milwaukee Not in the Thing Itself
Henry H Turner Oklahoma City Hypogonadism and Infertility in the Male
Henry W Cave New York Acute Surgical Abdomen
Daniel C Elkin Emory Ga Diagnosis and Treatment of Aneurysms and Arteriovenous Fistulas
Robert P Kelley Emory Ga Injuries of the Ankle
Dwight M Kuhns Washington D C Tropical Diseases in New Guinea the Philippines Japan and Korea During and Following World War II
Arthur W Allen Boston Ulcer and Cancer of the Stomach
Russell L. Cecil New York Cortisone and Corticotropin in Treatment of Chronic Arthritis
Earl E Gambill Rochester Minn Relapsing Pancreatitis
Julian Johnson Philadelphia Present Status of Cardiac Surgery
Robert P Ball Baton Rouge La Angiography
Arthur L. Juers Miami Fla Deafness Its Present-day Management

Dr John W Cline San Francisco President of the American Medical Association will give the principal address at the president s luncheon Wednesday at the Brown Hotel on Problems Confronting Medicine in the Immediate Future " The University of Louisville School of Medicine is holding five class reunions (1901 1911 1921 1931 and 1941) during the centennial These classes will be recognized at the meeting In addition to scientific and commercial exhibits there will be historial exhibits portraying one hundred years of medical developments and progress

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Physicians are invited to send to this department items of news of general interest for example those relating to society activities new hospitals education and public health. Programs should be received at least three weeks before the date of meeting

MARYLAND

Postgraduate Lectures in Basic Sciences —The Postgraduate Committee of the University of Maryland School of Medicine announces a lecture course in basic sciences as they apply to the practice of medicine to be offered beginning Oct 3 Emphasis will be primarily on developments in the various basic sciences during the past 10 years Thirty-two two hour meetings will be held on Wednesdays at 4 p m except during university holidays, in Bressler Lecture Hall Each meeting will consist of a lecture on the topic of the day followed by a period devoted to questions and comments by the members of the group Lectures will be in the fields of physiology histology, pharmacology, biochemistry, neuroanatomy, and immunology Gross anatomy and pathology are not included, since these subjects are already covered by courses now being offered at the university Tuition is $50 Information may be obtained from the Office of the Postgraduate Committee, 6th floor Bressler Building, 29 South Greene St, Baltimore

MASSACHUSETTS

Seminar in Pediatric Neuropsychiatry —A postgraduate seminar *in neuropsychiatric disorders of childhood and youth will* be held at the Research Laboratory of the Walter E Fernald School in Waverly from 6 to 7 30 p m and 8 to 9 30 p m, on 10 successive Tuesdays beginning Oct 2 The seminar which covers psychoses, mental deficiency emotional disorders and cerebral palsy is open to physicians especially psychiatrists interested in child psychiatry and pediatricians It is also open to the auxiliary branches of pediatric neuropsychiatry workers in the field of psychology sociology social work and special education

MISSOURI

Anniversary of Tuberculosis Hospital.—The 50th anniversary celebration of the founding of Mount St Rose Sanatorium, St Louis, will be observed Oct 6 7 The hospital is reportedly the first institution of its kind established in the Middlewest for the exclusive care of tuberculous patients Facilities of the hospital will be shown to the public and exhibits will trace the hospital s history since its founding The St Louis Tuberculosis and Health Society will assist in the observance and will have a mobile x-ray unit on the grounds The Greater St Louis Community Chest is also participating in the anniversary In 1928 the sanatorium became affiliated with the St Louis University

NEW JERSEY

Clinic for Amputee Children —A seminar on the causes and rehabilitation of congenital amputations will be held at the Kessler Institute for Rehabilitation Pleasant Valley Way, West Orange, on Oct 17 beginning at 9 a m It is being held in conjunction with the semiannual free clinic for amputee children Dr Harrold A Murray of Newark will serve as moderator Among the speakers will be Dr Douglas P Murphy, Philadelphia, and Leslie C Dunn, Sc D, New York The afternoon program will be devoted to the individual examination of children by Dr Henry H Kessler, medical director of the institute Parents will be oriented to the problems of congenital defects and given specific instructions for the care of the amputee child at home Physicians may refer child amputees to the clinic by writing to the medical director of the institute The seminar is open to pediatricians, obstetricians, gynecologists, orthopedic surgeons, and technical personnel in rehabilitation and limb manufacturing There is no charge

NEW YORK

Appoint Safety Consultant —Mr Joseph M Goewey has been appointed as safety consultant, a new position in the New York State Department of Mental Hygiene The position entails responsibility for developing an advisory service relating to institution safety at the state mental hospitals and state schools Mr Goewey has been acting supervisor of the upstate safety division, State Insurance Fund for 15 years

Hutchings Memorial Lecturer.—The third annual Hutchings Memorial Lecture will be delivered Oct 1 at Syracuse University by Dr Robert A Cleghorn, associate professor of psychiatry at McGill University Faculty of Medicine Montreal, Canada on *The Interaction of Physiological and Psychological Processes in Adaptation* ' The Hutchings memorial lectures are sponsored by a memorial trust fund committee, together with the Onondaga County Medical Society, Syracuse Academy of Medicine, and Syracuse University College of Medicine

New York City

Tumor Conferences.—These conferences are being presented by Harlem Hospital beginning in October and extending through May The schedule is as follows

Oct 17 Cushman D Haagensen Cancer of the Breast
Nov 21 Bentley P Colcock Boston Thyroids
Dec 19 Joe V Meigs Boston Cancer of the Cervix
Jan 16 Sidney Farber Boston Recent Research in the Chemotherapy of Cancer
Feb 20 Ira T Nathanson Boston Relation of Hormones to the Therapy of Cancer
March 19 Joseph E Rall Rochester Minn Radioactive Iodine in the Study *and Treatment of Carcinoma of the Thyroid.*
April 16 Arthur Purdy Stout Tumor of the Pleura
May 21 Isidore Snapper Multiple Myeloma

Postgraduate Lecture —The Unity Hospital staff of Brooklyn will hear a lecture Oct 4 at 10 30 a m at the hospital on "The Management of Infertility," to be given by Dr Charles M McLane of Cornell University Medical College This instruction is provided by the Medical Society of the State of New York in cooperation with the New York State Department of Health

TENNESSEE

Postgraduate Course in Electrocardiography —This course presented by the Memphis Heart Association and open to all physicians in Memphis, Shelby County, and nearby territory, will be given on successive Tuesdays Oct 2 through Nov 29 at the University Center in Memphis from 7 30 to 9 30 p m Tuition *except for residents and interns, is $15*

Dr Alden Succeeds Dr Harrison as Department Head —Roland H Alden, Ph.D, formerly head of the department of microscopic anatomy, has been named chief of the division of anatomy at the University of Tennessee Medical Units in Memphis He succeeds Frank Harrison, Ph D, who has resigned to join the faculty of the Southwestern Medical School of the University of Texas, Dallas, but will continue as professor of anatomy until December Dr Alden has been on the faculty of the university since 1942 and has been professor and head of the department of microscopic anatomy since 1949 Dr Harrison joined the university staff as an instructor in anatomy in 1938

VIRGINIA

Annual State Medical Meeting —*The Medical Society* of Virginia will hold its annual meeting at *the Cavalier Hotel* in Virginia Beach Oct 7-10 under the presidency of Dr C Lydon Harrell, Norfolk Guest speakers include the following

Winthrop M Phelps, Baltimore General Management of the *Cerebral* Palsy Problem
Representative Hugh D Scott Philadelphia.
Theodore E Woodward Baltimore Bacterial Diseases.
John E Howard Baltimore Diagnosis and Treatment of Spontaneous Hypoglycemia

A panel discussion Monday at 4 p m on 'You and Your *Medical Associa* A M.A" will be presented by the American *Medical Associa* tion Dr Walter B Martin, member of the Board of Trustees will preside Speakers will be Drs Henry B Mulholland, Char lottesville, member of the Council on Medical Service *Louis* H Bauer, Hempstead, N Y., President-elect, and John T T Hundley, Lynchburg, president-elect of the *Medical* Society of Virginia Scientific and technical exhibits will be shown The Woman's Auxiliary will meet in conjunction with the associa tion

WEST VIRGINIA

Heart Association Meeting —The annual meeting of the West Virginia Heart Association will be held at the Hotel Morgan Morgantown on Oct 5 at 2 30 p m The scientific session will be opened by Dr Louis N Katz, Chicago president of the American Heart Association, who will speak on the dynamics of pulmonary embolism Dr Robert Taylor Cleveland will speak on electrolyte and fluid balance New officers will be elected following the scientific session The annual dinner will be at 7 p m

Warning Against Confidence Man —The Chamber of Commerce of Weirton reported to the West Virginia State Medical Association that a man using the name of H H Griffith has been representing himself as a salesman of medical books of the Pitman Publishing Company of Providence R I He is reported also to have used the name Griffith Publishing Company Those physicians in West Virginia who took advantage of his offer have had their checks cashed but have not received the merchandise Griffith is about 60 years of age, weighs about 185 pounds and is 5 feet 7 inches tall He has gray hair a florid complexion and has one upper tooth missing He has a pleasant manner a knowledge of medical terms and current events and is a good conversationalist He claims to be the father of a World War II aviator who was a companion of Ernie Pyle and who was killed on a raid over Tokyo The Pitman Publishing Company of New York (not Providence) has notified the Weirton Chamber of Commerce that it does not have a representative by the name of H H Griffith and further, that it does not publish medical books with the exception of a textbook on medical photography

GENERAL

Academy of Ophthalmology and Otolaryngology —The American Academy of Ophthalmology and Otolaryngology will hold its annual meeting at the Palmer House Chicago Oct 14 19 under the presidency of Dr Derrick Vail Chicago At the opening joint session of the specialties Dr Shields Warren Boston has been invited to speak on The Pathologic Pattern of Atomic Injuries " and Dr Champ Lyons Birmingham Ala , on Isotopes in Medicine Invited speakers giving papers before the sections include the following

Count Hermenegildo Arruga Barcelona Spain guest of honor *Consideration on Surgical Treatment of Retinal Detachment*
W Morton Grant Boston Clinical Tonography
Gilbert Roy Owen Los Angeles The Key Area in the Chronic Mastoid
Harley E. Cluxton Jr Chicago New Concepts in the Use of Corticotropin in Ophthalmology and Otolaryngology

The Jackson Memorial Lecture will be given Thursday morning by Dr John H Dunnington New York on Ocular Wound Healing In the afternoon Dr Jerome A Hilger St Paul will deliver the Wherry Memorial Lecture on The Autonomic Nervous System At the annual banquet Wednesday at 7 p m Dr Victor Johnson director of the Mayo Foundation Rochester Minn will speak on Problems in Graduate Medical Education Numerous alumni dinners are scheduled as well as special scientific programs

Life Insurance Research Grants —Applications for 1952 grants in aid of research on cardiovascular problems will be received by the Life Insurance Medical Research Fund up to Nov 15 Support is available for physiological biochemical and other basic research which bears on cardiovascular problems as well as for clinical investigation in this field It is expected that about $600 000 will be awarded in these grants Preference will be given to candidates who wish to work in the broad field of cardiovascular function or disease and to candidates who wish to work in institutions other than those in which they have obtained most of their experience A doctor s degree (M D or Ph D) or the equivalent is required The annual stipend varies as a rule being between $3 000 and $4 000 with larger amounts in special cases About 15 new postdoctoral fellowships will be available New grants and fellowships will become available on July 1 1952 A number of predoctoral fellowships for basic training in research will also be awarded Further information and application blanks may be secured from the Scientific Director Life Insurance Medical Research Fund 2 East 103rd St New York 29

Midwest Meeting of Physicians.—The Midwest Regional Meeting of the American College of Physicians will be held in the Arthur Johnson Auditorium of Ohio State University in Columbus Oct 13 Those speaking by invitation include the following

Herman K Hellerstein Cleveland Cardiac Complications During Surgical Operations and Their Control
William H Reeder Jr Albany Ga Pulmonary Infiltration with Eosinophilia
Royal Rotter Madison Wis. A Comparison of the Anticoagulants Dicumarol® (Bishydroxycoumarin) Compound No 63 and Tromexan® (Ethyl Biscoumacetate)
Erwin Levin Chicago A Simple Measure of Gastric Secretion in Man and Its Clinical Implications.
Malcolm M Hargraves Rochester Minn Lupus Erythematosus Clinicians Problem
Gordon S Stewart Oak Park Ill Ability of the Parathyroid Glands to Regulate Serum Calcium in the Absence of the Kidneys
Carl Davis Jr Chicago Problems of Transplantation of the Kidney in the Dog.

Portable Television Station —A complete portable television station began a 10 week air tour of Europe Aug 29 as part of Video Medico, the medical flying caravan Arranged by E R Squibb & Sons International Corporation and operated by Radio Corporation of America engineers, special electronic equipment will bring surgical and clinical demonstrations by television to an estimated 40,000 physicians and members of allied professions in Copenhagen, Stockholm Brussels, Catania, Turin Rome and Milan The tour in Europe has been arranged with the cooperation of the second International Poliomyelitis Conference (Copenhagen), the fifth general assembly of the World Medical Association (Stockholm) and Laboratories Labaz and Laboratori Palma, Squibb licensees in Belgium and Italy, respectively The scientific team that will handle the television programs in cooperation with local doctors will include seven RCA engineers and Leonard J Piccoli Ph D director of professional *services of the Squibb overseas laboratories Squibb and RCA* Victor last year conducted a similar tour through South America demonstrating the new teaching medium before 16 000 members of four leading Latin American medical groups

Pathologists' Meetings.—The annual meetings of the College of American Pathologists and the American Society of Clinical Pathologists will be held at the Drake Hotel Chicago Oct 15 19 The first day will be devoted to college activities, the second day to joint undertakings and the remainder of the week to the society s program The college will hold three panel discussions Oct 15 They are as follows

Blue Cross and Blue Shield Donald H Kaump Detroit moderator and John L Lattimore Topeka Kan Frederic E Elliott New York, Leo H Garland San Francisco Frank R Bradley St Louis Henry S Ruth Philadelphia and Mr Frank E Smith Chicago
Liaison Relationships in Organized Medicine Theodore J Curphey Hempstead N Y moderator and Ernest B Howard Chicago Leroy E. Burney Indianapolis E Dwight Barnett Detroit Herbert R Brown Rochester N Y and Maxwell J Fein New York
Handling of Medical Legal Unknowns Samuel A Levinson Chicago moderator and Russell S Fisher Baltimore Geoffrey T Mann Richmond Va Georg K Neumann Ph D Indianapolis Clarence W Muehlberger Ph D East Lansing Mich Joseph B Nicol M S Pittsburgh and J W Holloway Jr LL B Chicago

Scientific symposiums will be presented jointly by the two societies on Tuesday The first of these deals with parasitology and will be presented through Dr Emma S Moss, New Orleans In the afternoon a symposium on azotemia will be given, Robert P MacFate Ph D Chicago introducing the subject Detlev W Bronk Ph D president of Johns Hopkins University Baltimore will give the address at the joint banquet of the college and the society Tuesday evening Dr Tracy B Mallory, Boston, will present the Ward Burdick Award contribution of the American Society of Clinical Pathologists Wednesday morning on the clinico pathologic conference in the evolution of medical practice Thursday morning a symposium on electrolytes will be presented with Dr Benjamin B Wells, Little Rock, Ark , as moderator Participants will be Drs Carroll F Shukers Owen W Beard and Philip J Almaden all of Little Rock

Cancer Society Nomenclature Manual.—In an attempt to clarify and standardize the complicated terminology of cancer, the American Cancer Society has issued a new book titled ' Manual of Tumor Nomenclature and Coding" It will be distributed to cancer clinics and registries hospitals health departments medical schools research centers and to individual pathologists, surgeons, and statisticians Widespread use of the new tumor code is expected since it will be used in conjunction with the American Medical Association's Standard Nomenclature of Diseases and Operations and the World Health Organization s International Statistical Classification of Diseases, Injuries and Causes of Death" Employment of the code will result in more comprehensive statistical records since it classifies both benign and malignant tumors according to histological origin Heretofore most cancer death and incidence records have indicated only the site of tumors Work on the manual has been in progress since 1948 under the direction of an American Cancer Society statistics committee, Dr W Thurber Fales director of statistics for the City Health Department, Baltimore, chairman

Prevalence of Poliomyelitis—According to the National Office of Vital Statistics the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated

Area	Sept 15 1951	Sept 8 1951	Sept 16 1950
New England States			
Maine	[illegible]	6	10
New Hampshire	4	4	4
Vermont		1	8
Massachusetts	21	71	69
Rhode Island	1	3	2
Connecticut	18	30	51
Middle Atlantic States			
New York	192	178	[illegible]
New Jersey	51	43	81
Pennsylvania	64	89	112
East North Central States			
Ohio	80	102	126
Indiana	25	22	43
Illinois	132	108	117
Michigan	110	120	134
Wisconsin	100	106	62
West North Central States			
Minnesota	47	45	45
Iowa	21	31	104
Missouri	79	43	26
North Dakota	9	4	
South Dakota	14	[illegible]	6
Nebraska	48	48	25
Kansas	57	84	43
South Atlantic States			
Delaware			2
Maryland	11	13	79
District of Columbia	3	7	7
Virginia	14	14	51
West Virginia	10	21	10
North Carolina	18	16	23
South Carolina	17	2	22
Georgia	20	43	22
Florida	10	8	27
East South Central States			
Kentucky	21	27	45
Tennessee	34	63	42
Alabama	29	33	8
Mississippi	26	32	12
West South Central States			
Arkansas	25	28	21
Louisiana	12	100	16
Oklahoma	34	44	22
Texas	87	78	72
Mountain States			
Montana	11	6	
Idaho	8	10	12
Wyoming	20	13	3
Colorado	67	92	4
New Mexico	6	6	9
Arizona	11	29	12
Utah	40	44	3
Nevada	4		1
Pacific States			
Washington	22	30	24
Oregon	14	12	25
California	158	117	108
Territories and Possessions			
Alaska	*	1	
Hawaii	1	1	1
United States	1,718	1,871	2 14

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* No report received from Alaska

Additions—Virginia 17 cases delayed report—not allocated to specific weeks Nevada 2 cases for week ended Sept 8

CANADA

Canadian Psychiatric Association—This association has been incorporated, and officers were elected at a recent meeting in Montreal They are Dr Robert O Jones, Halifax Nova Scotia president, Dr Charles G Stogdill, Ottawa, vice president, Dr John P S Cathcart, Ottawa, secretary, and Dr Reginald C M Hamilton, Ste Anne de Bellevue Quebec, treasurer

Gross Memorial Lecture—The 14th annual Louis Gross Memorial Lecture will be delivered at the Jewish General Hospital in Montreal, Quebec, under the auspices of the Montreal Clinical Society Oct 17, 8 30 p m by Dr Myron Prinzmetal of Los Angeles on the auricular arrhythmias

DEATHS IN FOREIGN COUNTRIES

Ferinand Sauerbruch died in Berlin on July 2 one day before he completed his 76th year He is perhaps best known for his pioneer work in thoracic surgery In order to overcome the physiological difficulties of operating within the open thorax Dr Sauerbruch developed the low pressure chamber and the excess pressure apparatus Two stage thoracoplasty the basis of the present thoracoplasty operation, was developed by him It was at Dr Sauerbruch s clinic and with his method that Nissen achieved the first successful pneumonectomy in 1931 Dr Sauerbruch also contributed to surgery of the heart He was, however a general surgeon In both World Wars he made important contributions to restorative operations on the disabled Dr Sauerbruch had an international reputation he was a great teacher

MEETINGS

Ambulatory Fracture Association Arrowhead Springs Hotel San Bernardino Calif Oct 8 11 Dr H W Wellmerling 626 Griesheim Bldg Bloomington Ill Secretary

American Academy of Ophthalmology and Otolaryngology Chicago Oct 14 18 Dr W L Benedict 100 First Avenue Bldg Rochester Minn Executive Secretary

American Academy of Pediatrics Toronto Canada Oct 20-25 Dr E H Christopherson 636 Church St Evanston Ill Executive Secretary

American Association for the Surgery of Trauma The Seigniory Montebello Quebec Canada Oct 23 25 Dr Charles G Johnston 1512 St Antoine St. Detroit 26 Secretary

American Association of Blood Banks Hotel Nicollet Minneapolis Oct 22 24 Miss Marjorie Saunders 3301 Junius St Dallas 1 Texas Secretary

American Cancer Society New York Oct 25 Dr Charles S Cameron, 47 Beaver St New York Medical Director

American Clinical and Climatological Association Skytop Pa Nov 5 7 Dr Marshall N Fulton 124 Waterman St Providence R I Secretary

American College of Surgeons Fairmont Hotel San Francisco Nov 5 9 Dr Michael L Mason 40 E Erie St Chicago 11 Secretary

American Public Health Association Civic Auditorium San Francisco Oct 29 Nov 2 Dr Reginald M Atwater 1790 Broadway New York 19 Executive Secretary

Amercan Society for the Study of Arteriosclerosis Chicago Nov 4-5 Dr O J Pollak Quincy City Hospital Quincy 69 Mass Secretary

American Society of Anesthesiologists Washington D C Nov 5-8 Dr J Earl Remlinger Jr 188 W Randolph St Room 909 Chicago 1 Secretary

American Society of Clinical Pathologists Chicago Oct 15 20 Dr Clyde G Culbertson 1040 W Michigan St Indianapolis 7 Secretary

American Society of Tropical Medicine, Congress Hotel Chicago Nov 15 17 Dr Quentin M Geiman 25 Shattuck St Boston 15 Secretary

Association of American Medical Colleges French Lick Springs Hotel French Lick Ind Oct 29-31 Dr Dean F Smiley 185 N Wabash Ave Chicago 1 Secretary

Association of Life Insurance Medical Directors of America New York Oct 11 12 Dr Henry B Kirkland P O Box 594 Newark 1 N J Secretary

Association of Military Surgeons of the United States, Palmer House Chicago Oct 8 10 Colonel James M Phalen Armed Forces Institute of Pathology Washington 25 D C. Secretary

Central Neuropsychiatric Association Hotel Nicollet Minneapolis, Oct. 19 20 Dr Lee M Eaton 102 Second Ave S W Rochester Minn., Secretary

Central Society for Clinical Research Drake Hotel Chicago Nov 2 3 Dr Kenneth G Kohlstaedt 960 Locke St Indianapolis 7 Secretary

College of American Pathologists Chicago Oct. 15 16 Dr Tracy B Mallory Massachusetts General Hospital Boston Secretary

Delaware Medical Society of Wilmington Oct. 8-10 Dr Andrew H. Gehret, 1007 Park Place Wilmington, Secretary

District of Columbia Medical Society of the, Hotel Statler Washington Oct 1 3 Mr Theodore Wiprud 1718 M St N W Washington *Secretary*

Gulf Coast Clinical Society Edgewater Gulf Hotel Edgewater Park Miss. Oct 18 19 Dr C D Taylor 113 Davis Ave Pass Christian Miss. Secretary

Indiana State Medical Association Indianapolis, Oct 29 31 Miss Lucille Kribs 23 E Ohio St Indianapolis 4 Acting Secretary

Interstate Post Graduate Medical Association of North America St Louis Oct 22 26 Dr Tom B Throckmorton Equitable Bldg. Des Moines Iowa Secretary

Kansas City Southwest Clinical Society Municipal Auditorium Kansas City Mo Oct. 1-4 Dr Maxwell G Berry 630 Shukert Bldg Kansas City Mo Director of Clinics

Kentucky State Medical Association Columbian Auditorium Louisville Oct. 2 5 Dr Bruce Underwood 620 S Third St Louisville 2 Secretary

Midwest Regional Meeting American College of Physicians Columbus Ohio Oct 13 Dr B K Wiseman Kinsman Hall Ohio State University Columbus 10 Ohio Chairman

Nashville Postgraduate Medical Assembly Maxwell House Nashville Tenn Oct 3 5 Dr W G Kennon Jr 647 Doctors Bldg Nashville 3 Secretary

National Association of Clinic Managers Buena Vista Hotel Biloxi Miss Oct 29 31 Mr Floyd R Detert Marshfield Clinic Marshfield Wis *Secretary*

New Hampshire Medical Society Equinox House Manchester Vermont, Sept. 30-Oct 2 Dr Deering G Smith 44 Chester St Nashua, Secretary

North Pacific Surgical Association Vancouver B C Canada Nov 16-17 Dr J A Duncan 509 Olive Way Seattle Wash, Secretary

Oklahoma City Clinical Society Biltmore Hotel Oklahoma City Oct 29 Nov 1 Mrs Muriel R Waller 612 Medical Arts Bldg Oklahoma City Executive Secretary

Omaha Mid-West Clinical Society Hotel Paxton Omaha Oct 29 Nov 2 *Dr L E Moon 1031 Medical* Arts Bldg *Omaha 2* Secretary

Oregon State Medical Society, Masonic Temple Portland Oct 10-13 *Dr Robert F Miller 833* S W Eleventh Ave Portland 5 Secretary

Southern Medical Association Dallas Texas Nov 5-8 Mr C P Loranz, 1020 Empire Bldg Birmingham 3 Ala Secretary

Southwestern Medical Association El Paso Texas Oct 18 20 Dr W W Schuessler 1415 First National Bank Bldg El Paso Texas Secretary

Vermont State Medical Society Equinox House Manchester Sept 30 Oct 2 Dr James P Hammond 542 Main St Bennington Secretary

Virginia Medical Society of Virginia Beach Oct 7 10 Mr Richard H Nash 1105 W Franklin St Richmond *Executive Secretary*

Wisconsin State Medical Society of Hotel Schroeder and Milwaukee Auditorium Milwaukee Oct 1 3 *Mr Charles H Crownhart* 704 E. Gotham St Madison 3 Secretary

INTERNATIONAL

Commonwealth and Empire Health and Tuberculosis Conference, Central Hall London England July 8 13 Dr J H Harley Williams Tavistock House North Tavistock Sq London W C 1 England Secretary General

European Congress of Hematology Rome Italy Oct 3-6 Dr Sven Moeschlin Mediz Klinak Zurich Switzerland General *Secretary*

Inter American Congress of Surgery Buenos Aires Argentina Oct 1-6

International Congress on Mental Health Mexico City Mexico Dec 11 19 Mrs Grace E O Neill Division of World Affairs National Association on Mental Health 1790 Broadway New York 19 N Y

International Congress on Neuropathology Rome Italy *Sept 8-13* Dr Armando Ferraro 722 W 168th St New York N Y, U S A Secretary

International Congress of Physical Medicine London England July 14 19 Dr A C Boyle 45 Lincoln s Inn Fields London W C 2 England Hon Secretary

Pan American Congress of *Ophthalmology* Mexico City Mexico Jan. 6-12 Dr Luis Sanchez Bulnes Gomez Farias 19 Mexico 4 D F Secretary-General

Pan American Congress of Pediatrics Montevideo Uruguay Dec 5-8 Dr Maria Luisa Saldien de *Rodriguez*, Avenida 18 de Julio 1246 Montevideo Uruguay General Secretary

Pan Pacific Surgical Association Congress Honolulu Hawaii Nov 7 19 Dr Forrest J Pinkerton Suite 7 Young Bldg., Honolulu *Hawaii President*

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama *Examination* Montgomery June 24-26 1952 Sec Dr D G Gill 537 Dexter Ave Montgomery 4

Arkansas * *Regular* Little Rock Nov 8 9 Sec Dr Joe Verser Harrisburg

Colorado * *Reciprocity* Denver Oct 9 Final date for filing application is Sept 24 Ex Sec Mrs Beulah H Hudgens 831 Republic Bldg Denver 2

Georgia Atlanta June August Oct 9 11 Sec Mr R C Coleman 111 State Capitol Atlanta

Guam The Commission on Licensure will meet whenever a candidate appears or submits his credentials Ex Sec Dr John Y Battenfield Agana

Illinois Chicago Oct 9 11 Superintendent of Registration Mr Charles F Kervin Capitol Building Springfield

Indiana Indianapolis June 1952. Sec *Dr Paul R Tindall 1138* K of P Bldg Indianapolis 4

Kansas Topeka Dec 12 13 Sec Dr O W Davidson 772 New Brotherhood Bldg Kansas City

Kentucky *Examination* Louisville Dec 11 13 Sec Dr Bruce Underwood 620 S 3rd St Louisville

Maryland *Examination* Baltimore Dec. 11 14 Sec Dr Lewis P Gundry 1215 Cathedral St Baltimore

Michigan * *Examination* Lansing Oct. 10-12 Sec Dr J Earl McIntyre, 202-4 Hollister Bldg Lansing.

Minnesota * Minneapolis *Oct.* 16-18 Sec Dr Julian F DuBois 230 Lowry Medical Arts Bldg St. Paul 2

Mississippi *Reciprocity* Jackson December Asst Sec Dr R N Whitfield Old Capitol Bldg Jackson

Missouri *Examination* Kansas City Oct 18-20 *Reciprocity* Oct 17 Exec *Sec Mr John A Hailey* State Capitol Bldg Jefferson City

New Jersey *Examination* Trenton Oct 16-19 Sec Dr E S Hallinger *28 W State St Trenton.*

New Mexico * Santa Fe Oct. 8-9 Sec Dr Charles J *McGoey* Coronado Bldg. Santa Fe

New York *Examination* Albany Buffalo New York and *Syracuse* Oct. 31 Nov 3 Sec Dr Jacob L. Lochner Jr *23 S Pearl St Albany*

North Carolina *Examination* Asheville Oct 7 8 *Reciprocity* Asheville Oct 8 Sec Dr Joseph *J Combs Professional Bldg Raleigh*

Ohio *Examination* Columbus December *Reciprocity* Columbus Oct 2 *Sec Dr H M Platter* 21 W Broad St Columbus 15

Oregon * *Reciprocity Portland Oct 12 13 Examination Portland Jan* 1952 Ex Sec Mr Howard I Bobbitt 609 Failing Bldg Portland

South Carolina *Reciprocity* Columbia Oct 1 Sec Dr N B Heyward 1329 Blanding St Columbia

South Dakota * *Examination* Sioux Falls Jan 15 16 Ex Sec Mr John C Foster 300 First National Bank Bldg *Sioux Falls*

Virgin Islands Charlotte Amalie Nov *7-8 Sec Dr* Earle M Rice St Thomas

Wyoming *Examination* Cheyenne Oct. 1 Sec Dr Franklin D Yoder State Capitol Cheyenne

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Connecticut *Examination* New Haven Oct 13 Exec Asst Miss Mary G Reynolds State Board of Healing Arts 110 *Whitney Avenue New Haven* 10

District of Columbia *Examination* Washington Oct 22 23 *Sec* Dr Daniel L. Seckinger 4130 E Municipal Bldg Washington

Florida Gainesville Nov 10 *Sec* Mr M W Emmel Box 340 University of Florida Gainesville

Michigan Detroit and Ann Arbor Oct. 12 13 *Examination* Sec *Miss* Eloise LeBeau 501 W Michigan Ave Lansing 15

Minnesota *Examination* Minneapolis Oct 2 3 Sec *Dr* Raymond N *Bieter* 105 Millard Hall University of Minnesota Minneapolis

Nebraska *Examination* Omaha Oct 2 3 Director Bureau of Examining Boards Mr Oscar F Humble Room 1009 State Capitol *Bldg* Lincoln 9

Oregon *Examination* Portland Dec 1 Sec Dr Charles D Byrne State Board of Higher Education University of Oregon Eugene.

South Dakota *Examination* Vermillion Dec 7-8 *Sec* Dr Gregg M Evans 310 E 15th St Yankton.

Texas *Examination* Austin, Oct. 19 20 Chief Clerk *Mr B H* Kirk, 306 Nalle Bldg. *Austin*

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* Basic Science Certificate required.

DEATHS

Kretschmer, Herman Louis ⊕ a former President and Treasurer of the American Medical Association, died at his home in Chicago, September 23, aged 72, of acute ventricular failure Dr Kretschmer was born in Chicago on April 22, 1879 He received the degree of doctor of medicine from Northwestern University Medical School in 1904 and graduated from the university school of pharmacy in 1900 He became clinical professor of surgery at Rush Medical College, urologist at Presbyterian Hospital, consulting urologist to the Children's Memorial Hospital and was on the staff of the Veterans Administration Hospital in Hines, Ill In September, 1945, Dr Kretschmer became clinical professor of urology at the University of Illinois College of Medicine, serving until September, 1947, when he became clinical professor of urology, emeritus He had resigned as attending genitourinary surgeon to the Alexian Brothers Hospital in 1926 He served as chairman (1923 1924) and secretary (1920 1923) of the Section on Urology of the American Medical Association president of the American Urological Association the American Association of Genito Urinary Surgeons and the Clinical Society of Genito Urinary Surgeons His leadership was also recognized by membership in the International Society of Urology and his election to corresponding membership in the German and Hungarian urologic associations He was one of the organizers of the American Board of Urology in September, 1934, and had served continuously as its president until 1945 He was a fellow of the American College of Surgeons and was an honorary life member of the Toledo Academy of Medicine He was president of the Chicago Medical Society in 1931 and served for years as a member of its council He was president in 1948 of the Interstate Post Graduate Medical Association of North America and member of the board of governors of the Institute of Medicine, of which he had been president He was a member of the Western Surgical Association, Association for the Study of Internal Secretions, American Radium Society American Social Hygiene Association, American Association for the Advancement of Science, Association of Military Surgeons of the United States, and the Society of Medical History of Chicago In 1942 Dr Kretschmer was presented an award of merit from Northwestern University in recognition of worthy achievement that had reflected on Northwestern, and two years later was granted an honorary doctor of science degree He was a captain in the medical corps of the U S Army during World War I, and at the time of his death was a member of the board of honorary consultants of the Army Medical Library He was a member of the National Research Council and as chairman of the subcommittee on urology was responsible for the manual of war surgery on urology In 1930 he delivered the Mayo Foundation Lecture on urology at Rochester, Minn, the Lower Lecture before the Academy of Medicine of Cleveland in November 1944, the Belfield Memorial Lecture of the Chicago Urological Society in October, 1950, and the fourth Peter T Bohan Lecture at the University of Kansas Medical School in November, 1950 He was a member of the board of trustees of the Chicago Latin School and of the Harris Schools, serving as president of the latter In 1944 Dr Kretschmer received the honorary degree of doctor of science from Marquette University School of Medicine in Milwaukee and in 1949 was awarded the Cross of the Chevalier of the Legion of Honor of France in behalf of his contributions to medicine and his efforts in having the Pasteur monument placed in Convalescent Park, Chicago, opposite the Cook County Hospital He was author of many scientific articles and in 1945 was elected chairman of the board of editors of the *Journal of Urology*

HERMAN LOUIS KRETSCHMER, M D, 1879-1951

Kelly, William Webber ⊕ Green Bay, Wis, born Dec 7, 1876, University of Bishop College Faculty of Medicine, Montreal, Canada, 1903, past president of the state board of health and the Brown County Medical Society, served as president of the city board of education and as director and physician of the Green Bay Packers football team, fellow of the American College of Surgeons, affiliated with St. Mary's, St. Vincent's and Bellin Memorial hospitals, formerly a member of the board of visitors and the board of regents of the University of Wisconsin in Madison, died Aug 3, aged 74 of coronary thrombosis

Bass, Albert Leonard, Louisville, Ky, University of Louisville Medical Department, 1912, specialist certified by the American Board of Otolaryngology, member of the American Medical Association and American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, served during World War I, formerly on the faculty of his alma mater, affiliated with Louisville General, Children s, Kosair Crippled Children, St Anthony's, and Kentucky Baptist hospitals and Norton Memorial and St. Joseph infirmaries died July 18 aged 64

Lee, James Francis ⊕ Mount Vernon, Ohio, Starling Medical College, Columbus, 1897 died June 29, aged 74, of coronary occlusion and pneumonia

Null, Harry Olen, Chattanooga, Tenn, Chattanooga Medical College, 1907, also a pharmacist for many years county physician, affiliated with Erlanger Hospital, died June 23, aged 85

Seid, Reuben, Chicago, University of Illinois College of Medicine, Chicago, 1927, member of the American Medical Association died July 8 aged 53 of coronary occlusion

CORRECTION

Dr Orenstein Not Dead—The obituary notice of Dr Archie Orenstein of Hilo, Hawaii, published in THE JOURNAL, Sept. 1, p 75, was in error It was Dr Orenstein's son, Morton T Orenstein, who was killed in an airplane crash

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⊕ Indicates Fellow of the American Medical Association

GOVERNMENT SERVICES

CIVIL DEFENSE ADMINISTRATION

FCDA Policy on Construction of Hospitals.—FCDA has announced that its policy on hospital construction will be as follows

1 To encourage the location of new hospital facilities outside or on the periphery of the designated critical target areas, or if within such designated critical target areas, in positions appropriately removed from concentrations of other elements that constitute profitable enemy targets in order to minimize expenditures for shelters and other protective features required in target areas

2 To foster when the proper authorities determine that new hospital facilities are required in a critical target area the incorporation of essential shelters and other protective features in such facilities FCDA may contribute to the cost of such shelters and protective facilities

3 To encourage the construction of essential shelters and protective facilities in existing hospitals in critical target areas, and to make contributions toward the cost of shelters and other protective features

DEPARTMENT OF DEFENSE

Induction of Medical Officers for August and September Postponed.—The planned induction of 333 Priority I medical officers originally scheduled for August and once delayed temporarily, has again been delayed at the request of the Department of Defense In addition, the scheduled induction of 152 Priority I medical officers for September also has been temporarily postponed

The Department of Defense emphasized that the request was based entirely on a sustained volunteer rate of doctors applying for Reserve Commissions in the Armed Forces and does not represent a reduction in requirement for medical officers

Future induction of Priority I medical officers is dependent on the volunteer rate If the number of doctors applying for reserve commissions in the Armed Forces is not sufficient to fill requirements, it will be necessary to make up the shortage by induction

Priority I doctors are those who received their medical education at government expense, or were deferred from service during World War II to attend medical school, and who have served less than 90 days in the Armed Forces, the Coast Guard, or the United States Public Health Service

PUBLIC HEALTH SERVICE

Ultrasonics in Sewage Disposal.—Sound waves may be a means of reducing water pollution, according to Mark D Hollis, assistant Surgeon General of the Public Health Service The possibility was reported by Walter Lyon, a Public Health Service engineer, in the *Sewage and Industrial Wastes Journal* of September, 1951 His report on experiments conducted at Johns Hopkins University states that high frequency sound vibrations, beyond human audibility appear to speed up the process of settling solids out of sewage Practical application of the phenomenon will depend upon further technical development, Mr Lyon said

Hospital Construction.—By June 30 1951, the Public Health Service approved 1,580 applications for the construction of hospitals, health centers, and other related facilities under the Hill Burton Hospital Survey and Construction Act. The estimated cost of these projects is almost $1,186 000,000, of which the Federal share is over $424,000,000 Hospital beds provided by construction projects approved by June 30 will total nearly 76,000 Approximately 60% of the projects are for completely new facilities additions or alterations to existing facilities comprise the remaining 40% There were 709 new hospitals among the new construction projects and 235 health centers and other related hospital facilities

The majority of new projects are for health centers and for hospitals with less than 100 beds in communities with less than 5,000 population, while most of the alterations and additions to existing facilities are for hospitals with 100 or more beds in larger cities

Microbiological Research Program.—The Microbiological Institute of the National Institutes of Health, has awarded 102 research grants amounting to $1,088,952 for study of the therapy, epidemiology, and microbiology of a variety of diseases including tuberculosis, encephalitis, leprosy, amebiasis schistosomiasis malaria, Q fever, meningitis, and fungus diseases Other studies will be made on basic problems of the growth mechanism and action of bacteria and viruses

U S. ATOMIC ENERGY COMMISSION

AEC to Resume Operations at Nevada Test Site.—The Atomic Energy Commission will resume test operations in the near future at its Nevada test site near Las Vegas, according to Carroll L. Tyler, manager of the Commission's Santa Fe operations office Mr Tyler further said

> The Atomic Energy Commission has authorized a program of experimental detonations of both ordinary high explosives and nuclear explosives to begin in the near future The site will be used periodically Individual experiments and series of tests will be conducted as required. All tests will be under controlled conditions As was demonstrated during the test program in Nevada earlier this year there will be adequate safety provision
>
> Off-site radiation above normal levels which resulted from the previous Nevada tests was far below the levels which could be harmful to humans animals or crops. Similar radiation levels which are slightly above normal may be anticipated following some experiments. This will occur not only in Nevada but also in other sections of the country All necessary precautions including radiological surveys and patrolling of the surrounding territory will be undertaken to insure that safe conditions are maintained

MISCELLANEOUS

To Lecture in Pakistan.—The state department announced that Dr Ulysses Grant Dailey, Chicago, has been selected to tour Pakistan for three months, giving lectures and holding clinics for the surgical profession and for medical students there Dr Dailey is former chief of the surgical department at Provident Hospital, and is now consultant to the department He is an assistant editor of the *Journal of the International College of Surgeons* and is a fellow of both the International College of Surgeons and the American College of Surgeons A graduate of Northwestern University, he taught anatomy at Northwestern for a number of years and did postgraduate work in Paris, Berlin and Vienna He plans to leave Oct 1 and return Feb 1 concentrating his activities in Karachi and Lahore in western Pakistan, and Dacca in eastern Pakistan

Children's Bureau.—Approximately 215 000 children received diagnostic service or treatment under state crippled children's programs during 1950, an increase of 35,000, or 18%, over the 1949 record This record included the largest number of children (40,000) ever hospitalized by state crippled children's agencies in these federally-aided programs conducted under the Social Security Act The average length of hospital stay was 36 days per child as against 53 days in the year 1943, which had the peak record The shorter hospital stay required was attributed to earlier detection and treatment, use of antibiotics, and increased knowledge of treatment for crippling conditions

FOREIGN LETTERS

DENMARK

Danish Vital Statistics.—The Danish Ministry of Health has published some vital statistics for 1949 and 1950 The "normal incidence, based on the records of previous years of certain diseases is given in parentheses In 1950, there were only 17 cases of typhoid (40) and only 42 cases of paratyphoid (120) Epidemic encephalitis decreased to 13 (30), and diphtheria to 61 (1,350), a decline foreshadowing the complete extinction of this disease in the near future Puerperal fever decreased to 65 (240), and congenital syphilis to 24 (40) These figures are to some extent counterbalanced by the following figures In 1950, acute poliomyelitis with paralysis increased to 316 (50), measles to 63,745 (2,700) pertussis up to 18,133 (14,800), and influenza up to 255,630 (151,000) In the same year lobar pneumonia was practically doubled, with 7 457 cases (3,700) Gonorrhea increased only slightly, but acquired syphilis increased to 743 (515) Delirium tremens, with 23 cases, was more than doubled (10)

The general mortality in 1950 was 9 2 per 1 000 inhabitants compared with 8 9 in 1949 There was an improvement in infant mortality, which was 31 per 1,000 live births in 1950, compared with 34 in 1949 During the last 12 years infant mortality in Denmark has been halved, a remarkable achievement which may be still further improved on in 1951, to judge by the data already available for the first part of this year Copenhagen is ahead of the rest of Denmark in this respect and has always been so A classification of the deaths in 1949 and 1950, respectively according to the diseases causing them, shows remarkable fluctuations Thus in 1949 there were as many as 137 deaths from pertussis, whereas in 1950 there were only 17 Deaths from pulmonary tuberculosis decreased from 672 in 1949 to 528 in 1950 and death from other forms of tuberculosis decreased from 111 to 76 As was to be expected, the deaths from cancer were approximately equal (6,634 in 1949 and 6,654 in 1950) The reduction in the number of suicides from 1,051 to 998 may possibly reflect improved treatment in cases of poisoning Deaths from diseases of the nervous system and heart rose between 1949 and 1950 There is now one physician to every 960 inhabitants in Denmark

New Danish Publications—Reference has already been made in these columns to the *Index Medicus Danicus*, published by the well known Ejnar Munksgaard firm The same publishers have also begun to issue two new quarterlies of interest to both doctors and book lovers The first is *Centaurus International Magazine of the History of Science and Medicine* The chief editor, Jean Anker, head of the University Library in Copenhagen, is assisted by A G Drachmann, E Gotfredsen (professor of the history of medicine at the University of Copenhagen) and M Pihl Twenty nine authorities from different parts of the world, including H R Viets of Boston and Douglas Guthrie of Edinburgh, are on the editorial board The original articles in *Centaurus* are to be published in English, French, and German and the annual subscription rate is 40 Danish kroner

The other quarterly, also costing 40 Danish kroner (publication by Munksgaard began in 1950), is entitled *Libri* its main object is to serve librarians and other book lovers Jean Anker is chief editor of this journal also Among the original articles in the first issue is one by Kleberg on bibliophiles in ancient Rome

Leocillin, a New Penicillin Derivative—In 1950, K A Jensen and collaborators published an account of leocillin a new penicillin derivative The journal of the Danish Medical Association, *Ugeskrift for Laeger*, for Aug 9, 1951, is largely devoted to this subject, an editorial article serving as an introduction to three original articles In the first two, experimental and clinical observations are reported The action of the soluble hydrochloride of leocillin was compared with that of penicillin and the action of a comparatively insoluble leocillin was compared with that of procaine penicillin in guinea pigs Healthy young human beings were tested with 300,000 units of leocillin and procaine penicillin in order that the concentration of the two in the serum might be compared The encouraging results of these tests led to the administration of leocillin in a single dose of 600,000 units to 25 patients with pneumonia Relapse occurred only in an 86 year-old patient, who recovered after a second injection of the same dose Though these findings suggest that a single large dose of leocillin may be relied on to effect a cure, it is probable that the treatment may have to be repeated when pneumonia has developed as a sequel to chronic bronchitis It may be claimed for leocillin that it is the first penicillin derivative showing a specific action on certain organs The comparatively high concentration of the antibiotic in the lungs and sputum, and in lesser degree in the brain, suggests that it may prove especially useful in chronic diseases of the lungs in which earlier penicillin preparations have failed to reach a sufficiently high concentration The third article by J C Nielsen, gives an account of the treatment of acute suppurative otitis media treated with procaine penicillin and a combination preparation known as dipenicillin The results achieved in 57 cases suggested that dipenicillin is more effective than the earlier preparation

Progress of BCG Vaccination in Denmark—In a recent survey of the development of BCG vaccination in Denmark Dr Knud Winge of Copenhagen has cited some instructive figures The school children of Copenhagen have been systematically tested with tuberculin since 1937, and since 1943 negative reactors at the school leaving age have been offered BCG vaccination Between Oct 1 1948, and March 31, 1949, five physicians went from one school to another to give this treatment Altogether some 39,000 tuberculin negative pupils or about 70% of all who were tuberculin negative, were thus treated Since this vaccination was carried out there has been a sharp decline in the number of notifications of pulmonary tuberculosis in children between the ages of 5 and 14 In 1948 there were 158 notifications of pulmonary and hilar tuberculosis In 1949 there were only 84 such new cases, and in 1950 this number was further reduced to 52 In none of these 52 cases had the children been vaccinated with BCG During the same period there has been a decided reduction in the number of children requiring admission to tuberculosis hospitals BCG vaccination is now being offered children under school age and to all infants born in the municipal maternity hospitals in Copenhagen Not one fatal case of tuberculous meningitis, miliary tuberculosis, or pulmonary tuberculosis has occurred throughout the period 1935 1950 among children vaccinated with BCG and known to the central tuberculosis authorities as belonging to an infectious environment

ISRAEL

Sickle Cell Disease Among Oriental Jews—The present mass immigration to Israel, with its host of problems, challenges medicine but also provides medical research with a multitude of opportunities F Dreyfuss of the Hadassah Hebrew University Medical School Jerusalem, has undertaken a study of the incidence of sickle cell disease and of thalassemia (familial erythroblastic anemia, or Cooley s anemia) among the various ethnic groups of Jews and others in the Middle East As published in *Nature*, he and his co-workers, G Mundel and M Benyesch, have found that the Yemenite Jewish community contains a fair number of carriers of the sickle cell trait In the first series of examinations at the Hadassah Childrens Hospital at Rosh haAyin, 20 children, among 188 examined (10 6%), mostly Yemenites, were found to have sickle cells One child may have had sickle cell anemia They discovered several instances of the sickle cell trait among members of other Oriental Jewish communities Admixture of Negro blood for various reasons, is most improbable in these groups Taking into consideration reports on the occurrence of sickling in other Mediterranean countries, these workers assume that a new reservoir of the sickling gene—a non Negro, Mediterranean source—has been found

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The items in these letters are contributed by regular correspondents in the various foreign countries

CORRESPONDENCE

UNDECYLENIC ACID IN PSORIASIS

To the Editor—Drs Rattner and Rodin, in their article Treatment of Psoriasis with Undecylenic Acid by Mouth (*J A M A* 146 1113 [July 21] 1951) state, Although he [Dr Perlman] emphasized the preliminary character of the report there was no mistaking Perlman s enthusiasm over the results that were obtained, and this same note of satisfaction ran through his two subsequent reports The second paper quoted by I L Milberg and me was issued from the Skin and Cancer Unit of the New York Post Graduate Medical School and Hospital The clinical results were as follows Of 40 psoriatic patients with cutaneous lesions 12 showed unequivocal improvement during treatment 15 were somewhat improved 10 evidenced no change and 3 had distinct aggravation of the disease Seven of the eight patients with psoriatic arthropathy noted relief from pain While I participated in the survey of the clinical material the statistics were independently compiled accordingly such enthusiasm as was then displayed was shared by those who participated in the work and the preparation of the paper

Reference is made to an article by Drs L P Ereaux and G E Craig on "The Oral Administration of Undecylenic Acid for the Treatment of Psoriasis" (*Canad M A J* 61 361, 1949), but relevant quotation is not made of what they state in their summary We are sufficiently impressed with the results obtained in the treatment of psoriasis to continue with the internal administration of undecylenic acid alone and combined with topical therapy '

Of course undecylenic acid like any other drug may produce undesirable side-effects or reactions and, in the light of reports since the first papers appeared, the dosage as originally suggested for undecylenic acid should be reduced But the number of cases of clinical improvement of psoriasis observed with the administration of undecylenic acid which in many instances failed to respond to the customary therapy suggest that the improvement could scarcely have been mere chance but should be attributed to the action of the drug in spite of the vagaries of the disease which are well known Indeed as Drs Rattner and Rodin themselves state There has been no one drug or individual method of treatment that will cure psoriasis or even afford control of the disease in all cases with any degree of certainty It is this very difficulty that would warrant that any relatively safe drug carrying hope of therapeutic effectiveness in recalcitrant psoriasis, should be given an unbiased trial before it is declared worthless

I too have been disappointed by the many failures that I have experienced with undecylenic acid and my own results have not been consistent At the Chicago meeting I clearly stated While many dermatologists have had unfavorable results with the use of undecylenic acid for psoriasis others have had equally good results

Publicity given the subject in several health columns in newspapers was utterly unsought In my papers I laid no claim to nor professed to reach any conclusion as to, the efficacy of undecylenic acid in psoriasis and I merely recorded my observations which I felt would interest the medical profession Since my reports were sufficiently safeguarded by provisos against too sanguine an interpretation it is unfortunate that they should now be laden with implications which the texts were not intended to convey and that I should be identified with attitudes that were never mine

Final judgement as to the therapeutic merit of undecylenic acid in the management of psoriasis will necessarily rest with the members of the profession particularly those of our specialty in whose disposition for fairness and unbiased decision for the good of all concerned I have utmost confidence

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ADRENOCORTICOTROPIC ACTIVITY OF PLASMA

To the Editor—The adrenocorticotropic activity of human blood plasma has been tested with different techniques in hypophysectomized rats but partially conflicting results have been obtained Generally normal or boiled serum (Taylor A B Albert A and Sprague R G *Endocrinology* 45 335, 1949 Golla Y M L and Reiss, M *J Endocrinol* 3 5 1942) and acetonic extracts of plasma or serum were used (Bornstein J and Trewhella P *Lancet* 2 678, 1950 Cooke D S Graetzer, E and Reiss M *J Endocrinol* 5 89, 1948) Since inactivation or losses of hormone might occur with these techniques thus accounting for the inconsistency of the results so far reported the adrenocorticotropic activity of the same samples of normal unfractionated blood plasma has been investigated immediately and 4 and 12 hours later, with the ascorbic-acid-depletion method (Sayers M A Sayers, G and Woodbury, L A *Endocrinology* 42 379 1948)

The volume of plasma injected in hypophysectomized rats was 0 5 ml per 100 gm of body weight two or three animals were used in every assay The blood of eight men was tested Mean falls in ascorbic acid concentration from 36 6 to 66 8 mg per 100 gm of fresh tissue were obtained when heparinized blood plasma was injected immediately after quick centrifugation at 4 C The calculated average is 54 9 ± 3 48, corresponding to 160 micrograms of hormone per 100 ml of plasma (the hormone for preparing the dose response curve was sent by Dr C H Li) After four hours at 18 to 20 C, the average activity was decreased 49% after 12 hours the activity had almost disappeared

A lower adrenocorticotropic activity (of about 39%) was found when the fractionated plasma prepared according to Bornstein and Trewhella, was tested

The present experiments show (1) that adrencorticotropic activity is found in normal human blood and (2) that losses might occur when the tests are made with fractionated plasma or unfractionated plasma left for some time at room temperature

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PSYCHOTHERAPY IN CANCER PATIENTS

To the Editor—In their interesting article "The Psychological Management of Cancer Cases (J A M A 146 1547 [Aug 25] 1951), Drs Kline and Sobin conclude with the remark Other techniques such as hypnosis and intensive psychotherapy, are valuable in some cases I want to draw attention to the following *illustrative case In 1943* a patient was transferred to a state mental hospital apparently in pain He was restless did not appear *interested* in his family, and was totally absorbed in his symptoms In various other hospitals observers had found it difficult to believe that such severe pain would have existed for three weeks" His complaints were thought to be *psychoneurotic*, hypochondriacal and the like He had had an electric shock treatment in a private hospital In the state hospital the psychotherapeutic efforts stressed the necessity of relaxing and forgetting his personal problems and his preoccupation with his body Under such psychotherapeutic guidance and without receiving any potent medication he soon showed *increasing improvement* in his general attitude and behavior became much less plaintive and whining and worked regularly at occupational therapy He was observed talking freely and laughing with other patients It was decided to bring him up for parole but on the day this decision was reached, he died suddenly. Autopsy revealed pulmonary embolism and carcinoma of the pancreas with widespread metastases.

Dr. Otto Kant described this case in the *Psychiatric Quarterly* (20:129 [Jan.] 1946). When the patient actually was on the threshold of death, a psychotherapeutic approach led within a short time to a remarkable change of attitude and to complete suppression of his main symptoms," to which I want to add: Psychotherapy is worth while even in carcinomas.

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CANCERPHOBIA

To the Editor:—I cannot overstate my enthusiasm for the contribution "The Psychological Management of Cancer Cases" by Drs. Kline and Sobin in the Aug. 25, 1951 issue of THE JOURNAL. It is a thoughtful, helpful, and, to me, an altogether satisfactory answer to the dilemma which so often confronts the doctor. I hope it will do much to quiet those who want the question "to tell or not to tell" answered categorically 'yes" or 'no.'

I am, however, disturbed by a statement which appears in the text: ". . . along with its benefits, the (cancer) educational campaign has resulted in an almost national cancerphobia." This is a remarkable generalization, and I wonder whether there is valid documentary evidence to support it. On the basis of a survey conducted by us in 1949 among a 10% sample of the diplomates of the American Board of Psychiatry and Neurology, it appeared that only 11% of the responding psychiatrists felt unequivocally that the current cancer education methods were *doing more harm than good, and therefore disapproved of them.* It is my belief that the phrase "national cancerphobia" is an unfair exaggeration of the facts. It is, moreover, an unwarranted indictment of the American character, which happily is not yet so weakened as to be panicked by cancer or by any other enemy, but which, per contra, continues to look reality straight in the face, to fear what deserves to be feared, and then to do something about it.

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ALLERGY MISTAKEN FOR TUBERCULOSIS

To the Editor:—I would like to stress a certain phase of the excellent article "Problems of the Geriatric Asthmatic and Their Clinical Management" by Dr. Tuft (*J. A. M. A.* 146:1480 [Aug. 18] 1951). It concerns the often erroneous diagnosis of active pulmonary tuberculosis when the true diagnosis should be allergic bronchial asthma with latent pulmonary tuberculosis. At the height of the pollen season, susceptible persons suffer from pollen asthma. They cannot sleep, and they lose weight and strength. The x-ray may show pulmonary infiltration, and a diagnosis of active disease may be made. Most of these patients are hospitalized and given streptomycin. Within a few weeks they make a striking recovery; this is attributed to the antibiotic and other care, whereas the change occurred from the coincidental subsidence of the pollen season.

Over 25 years ago, I saw my first such patient ready to be sent to a sanatorium with what was diagnosed as advanced tuberculosis. The real cause, clinically confirmed three times, was feathers, first indicated by skin allergy tests. The asthma started in this patient after feather beddings were brought from overseas to his home. X-ray showed old healed lesions, erroneously regarded as active. This man is in very good health today. There are many such cases, in the differential diagnosis of which allergic bronchial asthma should always be included. One should keep in mind that more than one disease may be active.

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MEDICAL MOTION PICTURES

Heparin in the Prevention and Treatment of Thrombosis: 16 mm., color, *sound, showing time 26 min. Produced in 1950 by the Jam Handy Organization, Detroit.* Procurable on loan from the Upjohn Company, Kalamazoo, Mich.

This motion picture covers the discovery, chemistry, physiology, manufacturing methods, and clinical application of heparin. The major portion of the film is devoted to clinical application, with particular emphasis on its use in peripheral venous thrombosis. There is also considerable emphasis on the various methods of administration of this drug, including the control by frequent determinations of the venous coagulation time. The picture is concluded with a comparison between heparin and bishydroxycoumarin (dicumarol®).

On the whole, it is a very good résumé of the present knowledge and value of heparin treatment. However, some of the overwhelming statistics reported are subject to revision on the basis of more recent work. There is perhaps too much discussion of the difficulties of bishydroxycoumarin administration and its control. A word of caution relative to the administration of protamine sulfate in concentrated solution should be introduced, and the value of heparin in pulmonary embolization, regardless of cause, should be more thoroughly stressed. This film is somewhat repetitious; with judicious editing it could be shortened without loss of any of its value. The photography and animation are well done. However, the film contains considerable statistical data, which would be difficult for any audience to retain. A supplementary booklet including this material would be helpful.

This film is recommended for general practitioners, specialists, residents, interns, and medical students in the third or fourth year in physiology, medicine, or surgery. It would be of some interest to nurses and technicians.

Obstetrical Maneuvers on the Ayers Manikin: 16 mm., color, sound, showing time 23 min. Prepared by Dr. Horace E. Ayers and Dr. John Mussio, New York Medical College. Produced in 1943 by Campus Films, New York. Procurable on rental or purchase from Clay Adams Company, Inc., 141 E. 25th St., New York 10.

This is a motion picture of a manikin demonstration. The film introduces the audience to the manikin practice room just outside of the obstetrical delivery room. The choice of forceps for the particular case is discussed; then the same obstetrical maneuver is shown by a demonstration of forceps delivery on the manikin and actual delivery on a patient. The film stresses the importance of manikin practice for both seasoned obstetricians and students. The employment of the Ayers manikin is a valuable adjunct to teaching the various operative obstetrical procedures to groups of medical students. A first impression might convey the idea that too many types of forceps are presented for student's use, but a further consideration of this as presented in the film portrays the value of the mechanism of this particular manikin and its adaptability to each type of instrument delivery. The close relation between the manikin practice and teaching on the live subject has an obvious value. The picture is suitable for medical students, instructors in obstetrics, and nurses. The photography is satisfactory.

Surgical Approaches to the Knee Joint: 16 mm., *color, sound, showing time 36 min.* Prepared by Dr. LeRoy Abbott, *University of California. Produced in 1951 by Churchill Wexler Productions, Los Angeles.* Procurable on loan from Presentation Division, Veterans Administration, Vermont Ave. and H St., N.W., Washington 25, D. C.

This well-organized film takes its place with the others in this series. The approaches used in the film are the median parapatellar, the approach for excision of the medial meniscus, the approach to the lateral compartment of the knee, and an especially well shown dissection of the popliteal space and the posterior knee compartment. It depicts the anatomic rather than the pathologic; for this reason it would be valuable for senior students who are reviewing anatomy with the surgical approaches in mind. It will be especially well suited for the training program of those in orthopedic and general surgery. The photography, animation, and narration are excellent.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

Annals of Surgery, Philadelphia

133 753 902 (June) 1951

*Annular Pancreas R L Payne Jr —p 754
Further Considerations in Internal Drainage of Pancreatic Cysts D H Poer and W G Whitaker —p 764
Malignant Melanoma M Gage and W Dawson —p 772
Effect of ACTH and Cortisone on Wound Healing Experimental Study E. M Alrich J P Carter and E. P Lehman —p 783
Parosteal Osteoma of Bone New Entity C F Geschickter and M M Copeland —p 790
Impacting Bone Plate to Attain Closed Coaptation C S Venable —p 808
Changes in Squamous Epithelium Following Surgical Treatment of Absence of Vagina Preliminary Report F E Whitacre and R H Alden.—p 814
Hysterectomy Personal Experience with 2 000 Consecutive Cases in Private Practice C Tyrone and J C Weed —p 819
Value of Blood Volume Determinations in Radical Operations for Cancer of Head and Neck Including Measurements of Operative Blood Loss H P Royster H P Pendergrass J M Walker and M Barnes —p 830
*Surgical Treatment of Carotid Body Tumors Value of Anticoagulants in Carotid Ligation J deJ Pemberton and G R Livermore Jr —p 837
Streptokinase and Antibiotics in Treatment of Clotted Hemothorax D Carr and S G Robbins —p 853
Physiologic Principles Underlying Treatment of High Diastolic Hypertension by Thiocyanates and Sympathectomy L Davis J Tarkington and R K Anderson —p 867
Unilateral Cervical Displacement of Cerebellum Associated with Basilar Impression Producing Signs of High Cervical Cord Tumor C Bagley Jr and G W Smith —p 874
Arteriovenous Fistula Between Middle Meningeal Artery and Greater Petrosal Sinus Case Report E F Fincher —p 886
One-Stage Reconstruction for Traumatic Denudation of Male External Genitalia B Douglas —p 889

Annular Pancreas.—The case discussed concerned a man 32, who had been under treatment for a duodenal ulcer for more than nine years Earlier x ray studies revealed "scar tissue from ulcer causing obstruction" The patient complained chiefly of epigastric pain nausea, gaseous distention and frequent belching. Relief was obtained only from vomiting Operation revealed a band of pancreatic tissue about 1 cm in thickness completely encircling the duodenum Proximal to this band the duodenum was dilated The portion of the pancreas anterior to the duodenum was resected The patient was greatly improved after the operation, but about six months later ulcer symptoms recurred and the dilatation of the second portion of the duodenum was as great as before the operation possibly because of the formation of adhesive bands An ulcer regimen effected significant improvement Fifty seven cases of annular pancreas have been reported in the literature Seventeen were treated surgically Of nine patients who had some type of short-circuiting procedure without a direct attack on the ring three died from unrelated causes, while six had a satisfactory result In those in whom the ring was removed persistent obstruction with retention in the stomach and duodenum was frequent while fistula formation was an added hazard

Anticoagulants in Carotid Ligation.—Pemberton and Livermore emphasize the management of those carotid body tumors in which ligation of the carotid arteries is required It is widely accepted that it is safer to ligate the common carotid artery than to ligate the internal carotid artery It is postulated that the rich anastomoses between the branches of the external carotid artery with those of the subclavian and opposite external carotid arteries allow collateral circulation to flow in a reversed direction down the external carotid, around the bifurcation, and up the internal carotid on the side ligated After ligation of the internal carotid artery a short distance above the bifurcation there remains a nearly stagnant column of blood, and this together with the trauma to the intima favors thrombosis The authors feel that the prophylactic use of anticoagulants is helpful in preventing late complications of ligation of the internal carotid artery They give 300 mg of bishydroxycoumarin orally 12 to 15 hours before operation when excision of the bifurcation of the common carotid seems likely Heparin is then started by continuous intravenous drip when the patient is on the operating table if the vessels actually must be sacrificed They keep the coagulation time between 15 and 20 or 25 minutes Oral administration of bishydroxycoumarin is resumed when the patient can take the tablets In 33 operations (32 cases), ligation was done 14 times with five deaths All deaths occurred in patients in whom no anticoagulants were used In the four cases in which anticoagulants were given plus one case of aneurysm of the common carotid artery in which treatment was similar, there were no deaths Residual cerebral symptoms persisted in only one patient, whose symptoms had appeared before administration of anticoagulants was started

Electroencephalography and Clin Neurophys, Boston

3 131-260 (May) 1951 **Partial Index**

Electroencephalogram in Cases of Subdural Hematoma and Hydroma J F Sullivan J A Abbott and R S Schwab —p 131
Electroencephalographic Findings in Essential Hypoglycemia I S Ross and L. H Loeser —p 141
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Effect of Atropine on Cortical Potentials W H Funderburk and T J Case —p 213
Slowly Changing Voltage of Brain and Electrocorticogram E S Goldensohn R L Schoenfeld and P F A Hoefer —p 231

Journal of Pediatrics, St Louis

39 1-132 (July) 1951

*Antibiotic Treatment of Pertussis Comparison of Penicillin Aureomycin Chloramphenicol and Terramycin in 150 Cases L N Hazen G G *Jackson Chang Shih Man* and others —p 1
Use of Carob Flour (Arobon) in Controlled Series of Infant Diarrhea T R Plowright —p 16
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Familial Degeneration of Cerebral Gray Matter in Childhood With Convulsions Myoclonus Spasticity Cerebellar Ataxia Choreoathetosis Dementia and Death in Status Epilepticus Differentiation of Infantile and Juvenile Types. F R Ford S Livingston and C V Pryles —p 33
Congenital Duodenal Obstruction Report of Two Cases Emphasizing Postoperative Course. C J Krafft R. F Neal and A T Henderson —p 44
Spatial Vectorcardiography in Children Analysis of High R Waves in Right Sided Chest Leads R. P Lasser and A Grishman —p 51
Weight Progress of Premature Infants Given Supplementary Feedings of Vitamin B_{12} Comparative Study H Rascoff A Dunewitz and R. Norton —p 61
*Polyarteritis Nodosa in Infancy and Childhood D B Fager J A Bigler and J P Simonds.—p 65
Atopic Dermatitis in Infants and Children. A Rowe Jr and A H Rowe —p 80

Antibiotic Treatment of Pertussis.—Of 150 patients between the ages of 4 weeks and 11 years with pertussis, 49 were treated with penicillin 33 with aureomycin, 37 with chloramphenicol (chloromycetin®), and 31 with terramycin. All the antibiotics were given by mouth in doses of 60 mg per kilogram of body weight per day, in four divided doses, for 10 days Following the institution of treatment with aureomycin, chloramphenicol,

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An asterisk (*) before a title indicates that the article is abstracted.

and terramycin Hemophilus *pertussis was eliminated from naso*pharyngeal cultures in three to four days and then could no longer be recovered, while this organism persisted for two to four weeks in most of the penicillin treated patients Rapid and steady improvement in the general condition occurred in almost every patient treated with aureomycin, chloramphenicol, or terramycin, while only a few patients showed significant or rapid improvement during treatment with penicillin In the patients treated with aureomycin, chloramphenicol or terramycin, particularly in those under 1 year of age, the frequency and severity of the paroxysmal cough decreased more rapidly than in the penicillin treated patients In some patients, however, there was an exacerbation of cough after the treatment was stopped There was *suggestive evidence that penicillin* had a slight beneficial effect on the whooping cough Preliminary observations on the antibody response in some of the patients suggested that the more rapid elimination of H pertussis from the nasopharynx following treatment with aureomycin chloramphenicol, or terramycin may have delayed and reduced the specific antibody production as compared with that observed in the penicillin treated patients

Polyarteritis Nodosa in Infancy and Childhood—Polyarteritis nodosa, although observed more commonly in recent years, is still an uncommon disease in childhood and especially so in infancy Only 52 cases have been reported in the English literature in infancy and childhood up to the age of 15 years Of these 52 cases eight occurred in infants less than 2 years of age 17 in children between the ages of 2 and 8 years and 27 in children between the ages of 9 and 15 years Recognition of polyarteritis nodosa during life is very difficult because it rarely starts as an initial disease entity If there is any pattern of symptoms it is of multiple organ involvement Pathognomonic is the palpation of subcutaneous nodules along the course of subcutaneous blood vessels A biopsy of such a nodule will lead to the correct diagnosis It is uncommon to make a diagnosis in children from a biopsy of muscle or other tissue taken at random when a nodule is not present Two fatal cases of polyarteritis nodosa occurring in a boy aged 4 months and a girl aged 6½ years are reported In both patients the illness began with an infection In one the diagnosis was virus pneumonia in the other scarlet fever Necropsy was performed in both Microscopic sections of the coronary arteries, vessels of the kidney spleen, and adrenal gland revealed the typical lesions of polyarteritis nodosa as originally described by Kussmaul and Maier and more recently by Arkin It seems most likely that hypersensitivity plays an important part in the etiology of polyarteritis nodosa and that the *sensitivity may be related to the* products of infection bacteria virus, or any other antigenic substance

Maine Medical Association Journal, Portland

42 133-164 (May) 1951

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Massive Hepatic Involvement by Metastatic Carcinoma with Negative *Cephalin-Cholesterol Flocculation Reaction Case Report* E Wasserman—p 137
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Maine State Police Bureau of Identification A Freeman—p 142
What Every Maine Doctor Should Know About Civil Defense and Public Safety Planning—Third Report C W Steele—p 148

Michigan State Medical Society Journal, Lansing

50 553 688 (June) 1951

The Elderly Patient E L Bortz—p 585
Clinical Application of Adrenergic Blockade in Sympathetic Predominance F F Yonkman—p 590
Clinical Use of Newer Antibiotic Agents in Surgery W A Altemeier—p 597
Complications of Diabetes P White—p 602
Clinical Significance of Hemoptysis N Levitt.—p 606
Ovarian Resection—Oviectomy—or Absolute Conservatism H F Traut—p 611
Recognition and Treatment of Vitamin D Resistant Rickets G H Lowrey and J F Holt—p 615
Histoplasmin and Old Tuberculin Reactors in Kent County Michigan H D Ireland—p 619

Nebraska State Medical Journal, Lincoln

36 221-252 (July) 1951

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Gastrointestinal Symptoms Due to Cardiovascular Disease M C Andersen—p 229
Gastrointestinal Symptoms Due to Diseases of Genito-Urinary System W F Novak—p 230
Gastrointestinal Symptoms Due to Infectious Diseases Allergy C A Tompkins—p 232
*Mesantoin in Difficult Cases of Epilepsy E E Houfek and H T Hermann—p 234

Mesantoin® in Epilepsy *—This study is concerned with* 19 out patients of the Epilepsy Dispensary of the University of Nebraska All 19 were treated with mesantoin® (3 methyl 5 phenyl 5 ethyl hydantoin) In 17 toxic reactions had previously developed, or they had become refractory to other medication Eleven patients had idiopathic grand mal epilepsy two had Jacksonian seizures, one had grand mal following encephalitis, one had psychomotor epilepsy, three had a combination of grand *mal and petit mal*, and one had a functional type of seizure probably psychomotor Five discontinued the use of mesantoin,® one because exfoliative dermatitis developed, two because of skin rash, one because of wooziness, and one because of unavailability of the drug Of the remaining 14 patients all were helped *some becoming seizure free Thus mesantoin®* has proved helpful in patients not responding to other drugs When this drug is given, the following precautions should be taken blood cell counts should be made monthly, and patients should be watched for skin rash and told to report if untoward effects are noted The combination of mesantoin® with trimethadione (tridione®) is to be avoided and with phenthenylate (thiantoin") is probably to be avoided Mesantoin® combined with diphenyl hydantoin (dilantin®) sodium and phenobarbital has proved effective in cases resistant to other medication

North Carolina Medical Journal, Winston-Salem

12 169 208 (May) 1951

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Operative Procedure for *Evisceration of Eye* W P McKay—p 186
Report of 60 Cases of Pterygia Removed by Kamel Technique M N Lymberis—p 188
Appendiceal Calculi Case Report C E Kernodle Jr and H B Kernodle—p 190
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Pennsylvania Medical Journal, Harrisburg

54 513 608 (June) 1951

Physiologic Basis for Choice of Anesthetic Agents and Methods F F Foldes—p 537
The Physician the Clergyman and the Patient in Terminal Illness The Rev E G Harris—p 541
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Radioactive Isotopes and Malignancy R H Chamberlain—p 550
Résumé on *Early Diagnosis in Pulmonary Tuberculosis* E A Favis—p 554
The Child as a Patient J F Robinson—p 557
Surgical Control of Intractable Pain J F Grunnagle—p 561
Role of Spinal Fusion in Low Back Pain R I Peck—p 564
*Treatment of Pruritus Ani R F Dickey—p 568

Treatment of Pruritus Ani—Pruritus ani may be initiated by disturbed bowel function trauma from harsh toilet hygiene hemorrhoids, drug irritation, sweating, and intertrigo Associated pathological entities include anal fissures cryptitis, papillitis, hemorrhoids fistulas redundant perianal tissues, pilonidal cysts, and sinuses Careful examination and history taking are necessary for proper diagnosis and treatment The author is convinced that in most cases nervousness is a result rather than the cause of pruritus ani Proper cleansing of the anal area is the most important therapeutic measure Patients must be instructed to cleanse the anal area three times a day *After detergent cleansing the* areas must be rinsed with a cotton ball *moistened with cold water* and then patted dry then if the patient has moist pruritus ani, he should apply an aluminum hydroxide gel thickened with kaolin, which absorbs moisture and seems to inactivate irritants The dry type of pruritus ani responds well to the weekly application by the physician of a mixture of one part trichloroacetic acid to three or four parts of water or cresol (lysol®) As soon as the area turns white the action is neutralized by a drying lotion The patient then uses the cleansing technique and applies an ointment Pruritus ani in which there are no pathological changes may be psychogenic may be due to disturbances in the lower gastrointestinal or genito-urinary tracts, or may be the result of systemic diseases Relief depends on control of the causative diseases For the temporary control of pruritus cold compresses or an ice bag are most effective Patients must be made to understand the harmful action of repeated rubbing and scratching

Radiology, Syracuse, N Y

56 799 954 (June) 1951

Duodenal Ulcer in Children F K Alexander —p 799
Enlarged Gastric Rugae Correlation of Roentgenologic Gastroscopic Pathologic and Clinical Findings Analysis of 41 Cases W W Vaughan J U Gunter and E A Erwin Jr —p 813
Secondary Radiation Fields Surrounding Photofluorographic Equipment W W Van Allen —p 832
Geometrical Anatomical Factors and Their Significance in Early X Ray Diagnosis of Hip-Joint Disease in Children H E Martin —p 842
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Surface Activity Following Administration of Radioactive Phosphorus A Geffen R Loevinger and B S Wolf —p 857
*Evaluation of Radioiodine Concentration Test in Study of Thyroid Disease N G Schneeberg W H Perloff and W Serber —p 869
Pulmonary Artery Obstruction Report of Case with Angiocardiographic Demonstration W S Tirman J L. Eisaman and J T Lloyd —p 876
Symphalangism and Related Fusions of Tarsal Bones F H Austin —p 882.
Demonstration of Duct of Wirsung Through Pancreatico-Cutaneous Fistula D Reikes and J R Nahon —p 886

Radioiodine Concentration Test —The ability of the thyroid gland to concentrate orally administered radioactive iodine (I^{131}) is regarded as a measure of its activity This test was performed on 115 normal subjects, 25 thyrotoxic patients and 19 hypothyroid patients to evaluate it as a routine diagnostic method The normal thyroid was found to concentrate between 10 and 35% of the administered dose The results in 13% of the normal subjects were below and in 10% were above these limits All the hyperthyroid patients concentrated 35% or more, and all the hypothyroid patients concentrated 10% or less The radioiodine test was found to be more than twice as accurate as the basal metabolic rate in the recognition of normal thyroid function and was equally diagnostic in thyroid disease A single 24 hour reading after the administration of radioactive iodine was found to be adequate for routine diagnostic studies

Review of Gastroenterology, New York

18 393-464 (June) 1951

Management of Hemorrhage from Upper Gastrointestinal Tract N W Chaikin and T Tuller —p 403
Treatment of Nonspecific Ulcerative Colitis with Aureomycin S Strax J A Marks and L T Wright —p 413
Use of Aureomycin in Amebiasis J E. Cox —p 423
Is Surgery Necessary for Silent Gallstone? J A Riese —p 426
Surgery in Massive Hemorrhage of Upper Gastrointestinal Tract E. J Halligan L L. Perkel J K Catlaw and L. Troast —p 432.
Remarks About Ulcer and Ulceriform Cancer of Stomach R A Gutmann —p 448

Aureomycin in Ulcerative Colitis.—Thirty-eight patients with active ulcerative colitis were treated with aureomycin in doses averaging 250 mg every eight hours In 31 there was reduction in bowel movements of 50% or more In 24 of 32 cases gross blood in stools disappeared Thirty three patients reported significant improvement in the sense of well being, including greater strength less pain and tenesmus Gain in weight (three to 28 lb [1 3 to 12 7 kg]) was reported in 14 patients weight loss occurred in six patients The sigmoidoscopic appearance was improved in 15 of 34 patients Six to 24 months follow up of 30 cases showed 21 patients to be well five improved two unimproved and two with malignant tumors When four patients whose diarrhea was controlled with aureomycin were given placebos the diarrhea promptly recurred in three Improvement again followed when treatment with aureomycin was resumed Nausea occurring in seven patients was controlled by milk or a bismuth subsalicylate mixture (pepto-bismol®) which do not interfere with absorption of aureomycin While the results here reported are most encouraging continued caution is urged in interpreting the ultimate value of aureomycin in ulcerative colitis therapy When medical management fails in the presence of gross pathological changes surgery is indicated The authors feel that aureomycin is the most satisfactory drug now available for the treatment of chronic idiopathic ulcerative colitis

Urologic & Cutaneous Review, West Palm Beach Fla

55 321-384 (June) 1951 **Partial Index**

Tumors of Kidney D A Charnock —p 321
Radiation Therapy in Diseases of Genito-Urinary Tract W E. Costolow —p 324
Bladder Neck Obstruction Relief by Surgical Methods J C Negley and E M Berkery —p 327
Management of Atonic Bladder Associated with Chronic Prostatism R M Nesbit —p 331
Treatment of Recurring Cystitis in Female M F Brodkin.—p 334
*Therapy of Peyronie s Disease E H Burford J E Glenn and C E Burford —p 337
Unexplained" Infertility and Culdoscopy Observations in 50 Consecutive Cases A R Abarbanel —p 339
Fallacies in Infertility E. T Tyler —p 344

Therapy of Peyronie's Disease.—During 40 years of practice Burford and associates observed 124 patients with Peyronie s disease (penile induration) The ages ranged from 22 to 84, but two-thirds of the patients were in the fifth and sixth decades A faulty connective tissue metabolism seems to play an etiological role, but the authors feel that trauma also should be considered although its role has been minimized The following conditions were mentioned as possible casual factors in 48 of the cases reviewed by the authors gonorrhea and/or chancre in 19 blow or other injury in 10, "break" during erection in sleep or intercourse in 7, urethral manipulations in 4, stricture of urethra at site of fibrosis in 3, presence of Dupuytren s contracture in 3 surgical removal resulting in intensification in 1 and penile blood clot in 1 The lesion usually appears as a pearl gray, glistening, scarlike tissue, from 3 to 5 mm in thickness and with a striated appearance, but some portions are nodular Surgery roentgen, and radium rays and tocopherols have been the treatments most frequently recommended in recent years The authors employed radium treatment in 91 of their 124 cases The dosage ranged from 50 mg hours to 325 mg hours The average was 120 mg hours for a single treatment Sixty of the 91 patients received only one treatment Complications in the form of indolent weeping and persistent ulcer resulted in three of the cases Surgical excision was successful in two of these three The authors believe that on the whole the use of radium has been safe and effective Recently they combined its use with tocopherol medication and concluded that this combination therapy is even more effective

Wisconsin Medical Journal, Madison

50 537 632 (June) 1951

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Case of Lymphoblastoma with Unusual Skin Tumefaction E A Pohle and M N Golper —p 559
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Early Diagnosis of Uterine Cancer and Its Management M J Jordan —p 568
Problems in Pediatric Surgery A A Schaefer —p 577
Use of Antibiotics in Otolaryngology F L Lederer —p

World Medical Association Bulletin, New Y

3 77 152 (April) 1951

The World Health Organization B Chisholm —p 83
General Adaptation-Syndrome and Diseases of Adaptation H Selye —p 85
Advances in Cardiovascular Surgery A Blalock —p 87
Therapeutic Uses of Blood and Blood Derivatives L K Diamond —p 88
Control of Peptic Ulcer A F R Andresen —p 90

FOREIGN

British Journal of Radiology, London

24 355-412 (July) 1951

SYMPOSIUM ON RADIOTHERAPEUTIC PHYSICS

I. Physical Aspects of Treatment of Cancer by 22 MeV X Rays H E. Johns, E K. Darby and R O Kornelsen —p 355
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V Dosage Control in Interstitial Gamma Ray Therapy W J Meredith —p 380
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Relationship Between Dosage Level and Incidence of Recurrence in Post Operative Irradiation for Carcinoma of Breast P T Chopping —p 401
Method of Treatment of Neoplasms of Posterior End of Alveolus K Sicher —p 403

British Medical Journal, London

1 1463-1524 (June 30) 1951

*Prevention of Whooping-Cough by Vaccination Medical Research Council Investigation S P Bedson W C Cockburn E T Conybeare and others —p 1463
Prognosis and Treatment of Cardiac Infarction Survey of 200 Patients. C Papp and K S Smith —p 1471
Isolation of Salmonellae from Faeces of Domestic Animals H W Smith and A Buxton —p 1478
Study of Hepatic Function in Man Before and After Partial Resection of Liver F V Flynn and J M Walshe —p 1484
Bone Dystrophy in Association with Muscular Dystrophy (Myopathy) D W Ashby G E. O Williams and O E. Smith —p 1486
Case of Primary Amenorrhoea Associated with Asthma M Frohlich. —p 1488
Albumin Antibody in Routine Rhesus Grouping Adaptation of Chown Capillary Method I M Tuck —p 1490

Prevention of Pertussis by Vaccination.—Ten controlled field trials were made in five different areas to assess the prophylactic value of pertussis vaccine in children Of 7,558 children between the ages of 6 and 18 months whose parents consented to take part in the study, 3,801 were inoculated with pertussis vaccine (referred to as the vaccinated group), and 3,757 were given a similar dose of "anticatarrhal" vaccine, which contained no Hemophilus pertussis (referred to as the unvaccinated group) Although the two groups were formed by random sampling, they proved to be strikingly similar in average age, average number of children in the families, and the average duration of observation Five batches of pertussis vaccine were tested With only a few exceptions there were no severe local or general reactions to inoculation None of the children had convulsions, and in none did poliomyelitis develop within two months of inoculation In all the trials, 149 vaccinated and 687 unvaccinated children developed pertussis The corresponding attack rates per 1,000 child months of observation were 1 45 and 6 72, giving a reduction in the incidence of disease of 78% Among children exposed to pertussis in their own homes the attack rates were 18 2% in the vaccinated and 87 3% in the unvaccinated group The cases that occurred in the vaccinated children were on the average less severe and of shorter duration than those in the unvaccinated children During the two to three-year follow up periods there was no evidence of a waning in the degree of protection afforded by the pertussis vaccines Swabs were taken from 806 (96 4%) of the 836 clinically diagnosed cases, and in 482 (59 8%) bacteriological confirmation was obtained Each batch of vaccine gave substantial protection but the two batches supplied by the Michigan Department of Health gave a much greater degree of protection than the others Vaccines prepared in Great Britain according to the method used by the Michigan Department of Health are now being tested in similar field trials

Nordisk Medicin, Stockholm

45 827 866 (May 30) 1951 **Partial Index**

*Chronic Cor Pulmonale S Samuelsson —p 827
*Surgical Treatment of Mitral Stenosis. C. Crafoord F Berglund H Ellasch and L. Werkö —p 831
*Early Diagnosis of Huntington's Chorea with Special Attention to Psychiatric Symptoms. C L. Laane.—p 835
Arteriography of Lower Extremities H E. Leschly Jacobsen and J Raun Byberg —p 840

Chronic Cor Pulmonale.—In 1945 chronic cor pulmonale, defined as strain and hypertrophy of the right side of the heart resulting from various chronic lung diseases and from hypertension in the lesser circulation, was diagnosed in 1 6% of 1,194 patients admitted to one division of the Rikshospital and in 7 6% of the patients with cardiovascular diseases The transition from predominantly pulmonary symptoms to the stage in which signs of strain or insufficiency of the right heart begin to appear is often not noted Right heart failure usually occurs after aggravation of the pulmonary symptoms Prominence of the pulmonary arch, best seen from the right oblique view, is the first roentgenologic sign of chronic cor pulmonale Other roentgenologic signs are dilatation of the right ventricle, increased caliber of the pulmonary arteries, and the absence of peripheral pulmonary stasis When roentgenologic differentiation between the cardiac changes in chronic cor pulmonale and those in congenital heart disorders is difficult, diagnosis depends on catheterization and angiography Severe cyanosis ("black cyanosis") and edema of the neck and head, signs of emphysema, and pulmonary changes suggest cor pulmonale The electrocardiogram is decisive here Chronic cor pulmonale is of relatively short duration and responds poorly to treatment With energetic treatment of the underlying pulmonary disorders, prevention of infections in the respiratory tract, and digitalization of patients with cyanosis, dyspnea, and palpitation of the heart on slight effort, the condition may be improved and the insufficiency warded off for a longer time Early digitalization is important, particularly since the treatment often fails after insufficiency sets in Patients with chronic cor pulmonale should when possible spend the winter in a milder climate After signs of insufficiency have appeared all means must be employed to control the insufficiency and anoxemia, as this type of insufficiency is often acute Sedatives must be given with the greatest care Morphine is strictly contraindicated because of its marked depressant effect in chronic cor pulmonale

Surgical Treatment of Mitral Stenosis.—Crafoord and his associates report seven cases of mitral stenosis in which commissurotomy was done, in six with dilatation of the mitral valve with the finger, in one instance with Bailey's knife All patients had cardiac catheterization before operation In the cases with digital dilatation of the valve, marked decrease in the pressure in the pulmonary circulation followed, with return to almost normal in two cases In all cases the brachial arterial pressure and the cardiac output increased In two cases with arterial saturation below normal before the intervention the values were normal afterward. There was notable subjective improvement in all cases Postoperative mitral insufficiency occurred in the case treated with Bailey's knife Commissurotomy is believed to be indicated in cases of pure mitral stenosis with signs of pressure in the lesser circulation and with poor filling of the left chamber. It is contraindicated in cases with rheumatic fever or other infections, other valvular defects, and insufficiency of the right heart that does not respond to treatment

Early Diagnosis of Huntington's Chorea—Eight cases of hereditary chronic progressive chorea (Huntington's chorea) treated at the University Psychiatric Clinic in Oslo from 1940 to 1951 are discussed by Laane. They illustrate the difficulty of correct diagnosis in early cases Disturbances in gait and in speech, perioral tremor and pain in the back and lower extremities are early neurological symptoms Psychiatric symptoms may appear a number of years before there are pronounced neurological symptoms Early diagnosis is important A family history of the disorder should be looked for Since this is such a grave disease and leads to severe disability, these patients should not have children Shock treatment has no effect on the disease and is dangerous Electroencephalography in three cases failed to give a characteristic picture Early institutional treatment is recommended

Ugeskrift for Laeger, Copenhagen

113 655 696 (May 24) 1951 Partial Index

Acute Radiation Sickness Review of Pathogenesis Clinical Symptoms and Treatment J E Thygesen —p 655
Case of Pellagra in Connection with Tuberculosis of Small Intestine with Multiple Strictures E Trier and H Brocks —p 669
Treatment of Fractures and Dislocations in Cervical Spine T Hølund —p 672
Meigs Syndrome V Petersen —p 675

Acute Radiation Syndrome Pathogenesis, Clinical Symptoms, and Treatment —Thygesen says that the term acute radiation syndrome means severe radiation sickness produced by massive universal irradiation for a short period The untreated clinical course of the acute radiation syndrome shows three fairly well defined forms the fulminant form the hemorrhagic and the pancytopenic In the fulminant form, after superlethal doses (several thousand roentgens), death occurs in a few hours in lethal doses, (600 1500 r) a shocklike condition is succeeded by vomiting, diarrhea fever and prostration with dramatic progression and death at the latest from seven to 10 days after exposure In the hemorrhagic form after less but still lethal exposure (300-600 r), nausea, vomiting and prostration are followed by some well being for 10 to 14 days after which there is increasing illness, often preceded by epilation with massive hemorrhage from the mucous membranes, ulcerations in mouth and intestines and flare up of the gastrointestinal symptoms Hemorrhagic agranulocytic necrotizing pneumonia often develops Death usually occurs from three to six weeks after exposure The pancytopenic form is most frequent after moderate doses (100 300 r) In from three to five weeks, alopecia, slight inflammation of mouth and throat, and weakness set in In most cases where aplastic anemia leads to a fatal outcome this occurs from two to four months after exposure Many patients survive The four stages now recognized in the clinical picture of the radiation syndrome are the initial, latent recrudescence and debility stages The duration of the latent stage is inversely proportional to the dose, the higher the dose, the shorter the latent period Epilation, easily observed diagnostically and a prognostically important sign with development of the monk s tonsure' may appear from two to five weeks after exposure Alopecia in a person suspected of having been exposed to irradiation injury is a probable sign of radiation effect usually expressed in the hemorrhagic form In the fulminant form death precedes epilation In the pancytopenic form the duration of epilation is a valuable prognostic sign as the hair is rapidly restored in surviving persons The pathogenesis of the radiation syndrome is not fully understood so that adequate treatment is not yet possible Supportive and symptomatic treatment is far from hopeless It should be remembered in the care of uncomplicated cases that all circumstances that increase the metabolism seem to increase the mortality Careful attention and psychic encouragement are important

Wiener klinische Wochenschrift, Vienna

63 393 412 (June 1) 1951

*Isolation of Virus in Several Cases of Boeck s Sarcoid S Löfgren and H Lundbäck —p 398
Early Diagnosis of Focal Dissemination K Gotsch and E. Kresbach —p 401
Slow Course of Cerebral Glioma Despite Progressive Malignancy H Lill —p 403

Isolation of Virus from Patients with Boeck s Sarcoid —The gastric irrigation fluid of 10 patients three with chronic pulmonary sarcoidosis, five with bilateral hilus lymphoma, which the authors consider as the initial stage of pulmonary sarcoidosis and two with cutaneous sarcoidosis, was inoculated into the amniotic or allantois cavities of impregnated chicken eggs The eggs were eight days old at the time of the inoculation They were incubated for four to eight days The fluids were then pipeted from the eggs and agglutination tests with suspensions of chicken blood corpuscles as well as complement fixation tests with suitable serums of patients were performed with various groups of eggs on which five passages were carried out Two to four blind passages were required before agglutinins could be demonstrated A virus was isolated by this technique from seven of the 10 patients with sarcoidosis Complement fixation tests showed that the isolated virus was either identical with or very similar to the mumps virus Viruses with similar serologic characteristics were isolated in three of eight cases of malignant lymphogranulomatosis The isolated virus strains gave positive complement fixation reactions with the serums of patients with sarcoidosis but the titers were low, and they might have been caused by previous mumps No definite increase in the complement fixation titer could be demonstrated in the course of sarcoidosis but a definite lowering of the titer was observed in many cases in the course of the disease Patients with sarcoidosis gave a cutaneous reaction to the dead virus The authors results do not solve the etiological problem of sarcoidosis but justify further studies of the same type

Zeitschrift für Orthopadie, Stuttgart

80 529 696 (No 4) 1951 Partial Index

*Demonstration of Thorium X in Metaphysial Growth Line and Its Influence on Length Growth in Young Rabbits W Koch —p 532
*Problems of Surgical Arthrodesis of Hip Joint A N Witt —p 559
Orthopedic Aspects of Sitting H Ollefs —p 573
Nailing in the Treatment of New and Old Fractures of the Navicular Bone H Giesekiing —p 597
Epiphysial Growth in Osgood Schlatter s Disturbance R Sevss and E Wiesner —p 623
Problem of Wound Infection in Henle Albee Operation W Legal —p 640

Effect of Thorium X on Growth —Even before World War I thorium X was used in the treatment of chronic polyarthritis lymphatic and myeloid leukemia and arteriosclerosis Since 1943 it has been used in a compound form in the treatment of tuberculosis of bones and joints and since 1946 it has been used in spondylarthritis ankylopoietica With this compound bands of greater density in the metaphysial lines particularly in the distal ulna radius the distal femur and the proximal and distal tibia fibula metaphyses, develop in children To clarify these roentgenologic changes in the growth lines (metaphyses) studies were made on growing rabbits with the thorium X compound After the rabbits had been treated from 10 to 16 weeks their increase in weight as well as in length was less than normal Selective deposition of thorium X in the metaphysial growth lines causes irradiation induced impairment of the metaphysial cartilage and causes, in all the growth lines chiefly involved in longitudinal growth a thickening of the cartilage and a widening of the zone of calcification in the cartilaginous substance The zone of calcification corresponds to the metaphysial bands of densification in the roentgenograms of joints and ribs Under the action of thorium X the calcium salts of the bone tissues decrease and spontaneous fractures result The disturbance in the endochondral ossification the decalcification of the bone and the selective deposition of thorium X in the newly calcifying or ossifying tissues suggests that thorium X therapy is inadvisable in diseases involving ossification of tissues It should not be used in pregnant women or in children

Arthrodesis of Hip Joint.—Witt describes a technique for surgical arthrodesis of the hip joint He shows that with the spreading nail he has designed fixation is better development of an adduction position is avoided immobilization in a cast can be either shortened or completely avoided hip arthrodesis is possible in very old patients and wandering of the nail is impossible The surgical intervention is simple and not extensive, being no greater than that involved in an extraarticular nailing of the neck of the femur The author s spreading hip nail is three flanged and has a perforation for a second nail, so that the tips of the two nails are 3.5 cm apart after complete insertion Since the nails are tightly screwed together, the fixation of the head of the femur in the acetabulum is secure

BOOK REVIEWS

Clinical Electrocardiography By Ashton Graybiel Captain MC USN Director of Research U S Naval School of Aviation Medicine Pensacola, Florida. Cloth $5 Pp 198 with 140 illustrations Thomas Nelson & Sons 19 E. 47th St New York 17 Parkside Works Dalkeith Road Edinburgh 9 3 Henrietta St London W C 2 1950 1951

This monograph is an expansion of a chapter previously published in Nelson s Loose Leaf Medicine The author has utilized this occasion to attempt an expanded presentation of the electrocardiogram in simple fashion He has made use of the principles of vectorcardiography primarily as it pertains to the frontal plane He has used the V limb lead together with the standard limb leads so that he can define the leads as placed 30 degree angles apart in one half the 360 degrees of a circle lying in the frontal plane He starts with aVL then follow I aVR↓ (aVR mounted upside down) II, aVF and III By using the transition zone of QRS and of T he is able to project their frontal vector He has developed a system whereby he can give the V limb lead the same magnitude as the ordinary limb leads (he calls these vV leads) He has used a similar approach for the precordial leads Much of this development is based on the concepts recently put forth by Grant and his associates for simplified vector analysis The author recognizes the approximate character of this methodology but believes that it has clinical utility It is a departure as far as the precordial leads are concerned from the semidirect concept of the Wilson school

With this background the author discusses the normal limits of the electrocardiogram the abnormalities in their appearance and the effect of certain physiological alterations and certain diseases on contour There is the usual presentation of arrhythmias The monograph is recommended not alone for the beginning student in electrocardiography wishing to get an idea of recent trends but also for the more advanced student to show him some of the limits of previous concepts of electrocardiography The author has kept his responsibilities in mind and has succeeded in, as he says a serious attempt to simplify without sacrifice of effectiveness the subject of clinical electrocardiography

Patterns of Disease on a Basis of Physiologic Pathology By Frank L. Apperly M A M D D Sc Professor of Pathology Medical College of Virginia Richmond Virginia Cloth $8 Pp 456 with 87 illustrations J B Lippincott Company 227 231 S 6th St Philadelphia 5 Aldine House 10-13 Bedford St London W C 2 2083 Guy St Montreal 1951

This book reflects the recent trend of integrating several originally separated disciplines In this instance a treatise developed from lectures on pathology to medical students covers as a unit many aspects of clinical medicine It is based on the principle of discussing the patterns of diseases as a whole and tracing them step by step through biochemical changes altered function altered anatomy and final outcome Furthermore the significance of the compensatory mechanisms stimulated by disease is emphasized in the clinical and pathological picture Thus anatomic and clinical pathology are interwoven with physiology and clinical symptomatology

In the first part which would correspond to general pathology the passive changes in disease, represented by disturbances of nutrition and peripheral circulation are discussed followed by a broad analysis of reactive changes to injury including all aspects of the problem of inflammation Pigmentation degeneration and tumors are then discussed Following is a discussion of the diseases of the different organ systems the major portion of the book Many intelligently arranged and original tables are used to show often in an original fashion the correlation between the various physiological and pathological factors Most of the illustrations (used sparingly for a textbook on pathology) are schematic drawings that are well-done The arrangement is exceedingly clear and specific information can be found quickly The diction is clear, concise and stimulating A large amount of factual information is compressed into a small space Many of the statements are deliberately dogmatic, so that the inexperienced will not be confused References to the literature are entirely omitted, and little attempt has been made to mention the names of those responsible for our present knowledge

One questions the place of this well written and intriguing book in medical teaching As a mere introduction to pathology, it is too detailed and does not discuss enough of the philosophy of the subject It is typical of the present trend of emphasizing function and deemphasizing morphology The question arises whether this trend is not carried almost too far here, in view of the statement structure without function is meaningless The student should not be deprived of knowledge of structures the function of which may only be known in the future It would be regrettable for medical students not to receive more detailed information of orthodox pathology and to be deprived of bibliographical references for further study Nevertheless the stimulating arrangement and presentation recommends this book as excellent collateral reading for the medical student and the practitioner seeking information in conjunction with one of the standard textbooks on pathology

Handbook of Medical Management By Milton Chatton A B M D Instructor in Medicine University of California Medical School San Francisco Sheldon Margen A B M D Clinical Instructor in Medicine University of California Medical School and Henry D Brainerd A B M D Assistant Clinical Professor of Medicine and Pediatrics University of California Medical School Second edition Cloth $3 Pp 507 University Medical Publishers Post Office Box 761 Palo Alto California 1951

This edition of a useful manual of clinical treatment looks smaller than the first edition but actually it has even more facts on its thinner pages Although the content is similar to that of the first edition, with chapters on the general aspects of medical management and then serially throughout the rest of the book, nearly all the common diseases, grouped according to etiology or system, there is a great increase in new detail on certain subjects This is particularly true for the new antibiotics and for corticotrophin (ACTH) and cortisone The book is not at all for systematic reading but is rather an extremely handy summary of techniques and treatments Both the beginner and the experienced practitioner in medicine will find it a most satisfactory guide

Modern Trends in Neurology Edited by Anthony Feiling B A M D F R C P Senior Physician Neurological Department St. George s Hospital London Cloth $13 50 Pp 717 with 202 illustrations. Paul B Hoeber Inc (Medical book department of Harper & Brothers) 49 E. 33rd St New York 16 1951

This sizable book has been prepared to present in concise form some of the more interesting and valuable additions to neurology of recent years The authors are well known figures in neurology in Great Britain and the United States The subjects dealt with are varied As is to be expected the chapters are of unequal quality For the most part they are thorough going utilitarian discussions A few, notably Chapter 2, on the frontal lobes and 4, on cerebral palsies of infancy, are poor The former is confused It is lacking in a clear statement of either the author s views or those of the investigators whom he castigates This entire chapter is characterized by the lack of discernment that is common to arm-chair" critics Chapter 4 is overly concerned with terminology and classification The essential facts are not clearly presented

Chapter 10, on abscess of the brain, and Chapter 11 on intracranial tumors are the best of the entire book The chapter on syphilis of the nervous system is indecisive The author seems to lack sufficient personal experience to permit definite opinions of his own The chapters on headache, myasthenia gravis, epilepsy electroencephalography, and neuroradiology are interesting and well prepared That on ruptured intervertebral disc has been prepared by W J Mixter, the dean in this field, and is well done One regrets however, the omission of a thorough

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The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated

going discussion of the midline herniations in the lumbar region with severe compression of the cauda equina and in the cervical region with implication of the cervical spinal cord

There are throughout the book a number of statements to which one must take exception For example "immodesty is common" after frontal lobotomy (page 75) patients with migraine handle responsibility poorly (page 109) lumbar puncture when undertaken without due precaution has frequently introduced organisms into the subarachnoid space and caused meningitis (page 163) sulfathiazole is the sulfonamide of choice in treating meningococcic meningitis (page 171) protein in the spinal fluid is usually increased only to 100-200 mg per cent in the Guillain Barre syndrome (page 212) treatment of syphilis of the nervous system with penicillin is associated with little or no risk angiomas on the medial surface of the posterior half of the cerebral hemisphere are, of course, supplied by the anterior cerebral artery (page 632), it is only careless technique if one fails to outline the ventricles by either ventriculography or encephalography (page 649), the commonest lesion in the spinal extradural space is an abscess (page 661) One also looks in vain for a discussion of the various infectious diseases and blood dyscrasias that are not infrequently associated with the Guillain Barré syndrome (pages 212 213) Most neurologists have discarded guanidine as of little if any value in the treatment of myasthenia gravis (page 506) The description and discussion of psychomotor attacks (page 572) is hardly adequate Vertebral angiography cannot be briefly dismissed, and the limitations listed by the author either are not correct or are not pertinent Obviously these are all minor isolated points and do not reflect unfavorably on the obvious worth of the book as a whole

Die Blutgerinnung in Theorie und Praxis Von Dozent Dr Josef Schmid Assistant der II medizinischen Universitätsklinik in Wien Band IV Wiener Beiträge zur inneren Medizin herausgegeben von Dozent Dr Hanns Fleischhacker Cloth $12 Pp 444 with 135 illustrations Wilhelm Maudrich Spitalgasse 1B Wien IX/2 1951

This well-organized book represents an attempt to compile the world literature concerning all problems related to blood coagulation, including the scientific as well as the practical clinical aspects The extensive Anglo-American literature in this field is thus made available to the German reader The data presented are fairly complete Where possible the clinically important facts are emphasized and existing arguments are pointed out The various activating and inhibiting factors in blood coagulation are individually discussed In addition clot retraction fibrinolysis and hemolysis are presented in separate chapters Additional chapters often with a historical review are devoted to hemophilia thrombopenia thrombosis, and other diseases with disturbed blood coagulation The modern therapeutic applications are clearly pointed out Special care has been given to a good description of methods in use which is documented by a large number of graphs The relative completeness of the available information makes this book a valuable reference also for the American scientist and physician

Lumbar Puncture and Spinal Analgesia. By R R Macintosh M A D M D A Nuffield Professor of Anæsthetics University of Oxford Cloth $4 50 Pp 149 with 111 illustrations by M McLarty Williams & Wilkins Company Mount Royal and Guilford Aves. Baltimore 2 1951

The author of this book is well known for his publications dealing with the teaching of fundamentals in anesthesia by the pictorial method This volume represents another valuable contribution which is greatly enhanced by the many excellent illustrations The essential objectives of this publication are to provide a technical guide for physicians learning the fundamentals of lumbar puncture and spinal analgesia and to aid surgeons who though expert in lumbar puncture are unfamiliar with the basic principles and management of spinal analgesia

A brief presentation of the early history of spinal analgesia is followed by a concise review profusely illustrated of the basic anatomy involved in this type of analgesia as well as a detailed discussion of cerebrospinal fluid A short but excellent chapter on sterilization forms a particularly valuable section of this book The technique of lumbar puncture is followed by consideration of the distribution of various analgesic solutions The final chapter on "Do s Don ts and Doubtful s" is preceded by a brief discussion of headache Emphasis throughout is on anatomic and physiological principles The pharmacologic aspect of spinal analgesia has but occasional consideration The work would be of greater value if this section were expanded including additional information regarding the relative toxicity and irritating qualities of various spinal analgesic drugs and solutions Previous authors are not in agreement with the views expressed in this book concerning the management of aseptic meningitis The volume is logically organized and well integrated An adequate number of important references appear at the close of each chapter The simplicity and clarity of this presentation should appeal to all who desire brief and basic information regarding lumbar puncture and spinal analgesia Printing and binding are excellent

Ocular Toxoplasmosis. By Michael J Hogan Associate Clinical Professor of Ophthalmology and Clinical Director of the Francis I Proctor Foundation for Research in Ophthalmology University of California Medical School San Francisco Cloth $2 75 Pp 86 with 28 illustrations. Published for American Ophthalmological Society by Columbia University Press 2960 Broadway New York 27 Oxford University Press Amen House Warwick Sq London E.C 4 1951

This monograph, prepared originally as a thesis for the American Ophthalmological Society, was considered important enough by the society to be issued as a special publication It summarizes well the current knowledge on toxoplasmosis as it affects the eye The principal involvement is retinitis or chorioretinitis usually in the macular or perimacular region which results chiefly from infection during intrauterine life A positive diagnosis is to be made on the basis of clinical findings with isolation of the Toxoplasma The author believes the complement fixation tests and methylene blue dye tests to be most reliable in arriving at a probable diagnosis

The author reports five cases of congenital toxoplasmosis and histological findings on the second eye in a case previously reported In experimental toxoplasmosis in rabbits there was localization of the lesion in the uveal tract when peritoneal exudate from Toxoplasma infected mice was injected into the carotid artery All drugs studied proved to be ineffective in controlling experimental toxoplasmosis in mice This well written volume is of importance to anyone interested in toxoplasmosis or in the prob'em of the etiology of uveitis

Primary Carcinoma of the Liver: A Study in Incidence Clinical Manifestations Pathology and Ætiology By Charles Berman M D B Ch Senior Medical Officer Consolidated Main Reef Mines and Estate Ltd Maraisburg Transvaal South Africa With foreword by Sir Ernest Kennaway *M D D Sc F R S* and introduction by Henry Gluckman M R C S L R C P Produced by means of grant from South African Council for Scientific and Industrial Research Cloth 35s Pp 164 with 83 illustrations. H K Lewis & Co Ltd 136 Gower St London W C 1 1951

This study is based on extensive clinical and pathological experience with hepatic cancer in the male Bantu in South Africa supplemented by investigation of many case records of cases occurring in this area as well as by a diligent and rather complete survey of the world literature on this subject

The result is a well-organized study from which information about hepatic carcinoma can rapidly be obtained Good illustrations assist in the presentation The book has four parts The first deals with the geographical and racial distribution of hepatic cancer It reveals that this disease is commonest among the Bantu tribe in South Africa less common in the Oriental races but here still of much higher incidence than in Western people The second part deals with clinical manifestations Frank acute abdominal febrile occult and metastatic forms are well-described Little optimism is exhibited concerning therapy The third part contains pathological description and it is emphasized that in the author s material cirrhosis was almost invariably present The fourth part deals with etiology The importance of environmental rather than genetic factors is emphasized (the incidence in the American Negro is low) Malnutrition leading to cirrhosis is considered the main etiological factor although others are not excluded Finally experimental production of hepatic cancer by carcinogens is relatively briefly reviewed The book is valuable because it makes readily accessible information that is otherwise widely dispersed

QUERIES AND MINOR NOTES

TREATMENT OF DRUG ADDICTION

To THE EDITOR —*'Merck's Manual,' 8th edition (page 1104) outlines a method of treatment for drug addiction according to the methadone withdrawal schedule Can such treatment be successfully carried out in a physician's office in mild cases? How can addicts be helped especially those who refuse to be hospitalized at Louisville?* *M.D New York*

ANSWER —The usefulness of methadone hydrochloride in the withdrawal treatment of heroin and morphine addiction was established at the United States Public Health Service Hospital in Lexington, Ky , and continues to be the best method, it is in daily use there as outlined in 'Merck's Manual ' Withdrawal in cases in which physical dependence has been established should be attempted only in a closed hospital situation Persons who have used heroin intravenously or intranasally several times daily for several months will certainly have established physical dependence Proof of this would be in the appearance of recognized withdrawal signs if the drug is withheld for 24 hours Narcotic addiction, of course, usually represents a symptom of an underlying personality disorder, and, as is frequently the case in this type of illness, there may be little insight and little desire for treatment Unless he is compelled by court procedure to undergo treatment, the patient must be persuaded that his addiction is a serious enough condition to justify his taking several months of his life in order to obtain the necessary hospital treatment Application for voluntary treatment at the Public Health Service Hospitals in Lexington, Ky , and Fort Worth, Texas, may be addressed to the Medical Officer in Charge of either institution As voluntary patients they may demand their release against medical advice before completing treatment but, if readmission is subsequently sought, they must commit themselves through local court action, which is legally possible only at the Lexington hospital because of an existing Kentucky law

The addict seeking gradual withdrawal treatment as an office procedure may be sincere but ignorant concerning such treatment or may be using one or more physicians as a source of drugs to continue his habit A physician who prescribes drugs for the office withdrawal of addicts must expect to be closely scrutinized by federal narcotic agents, who believe that hospital withdrawal is the only feasible procedure

TESTS FOR INCOMPLETE RH ANTIBODIES

To THE EDITOR —*In following an Rh-negative multipara through a pregnancy, can one rely on a negative blocking antibody test alone if performed regularly throughout the pregnancy?*

M D , Illinois

ANSWER —A variety of tests are in use for the detection of blocking or incomplete Rh antibodies antenatally in the serums of Rh negative multiparas Of these tests the least sensitive is the blocking test, the conglutination test is more sensitive, while the most sensitive tests are the antiglobulin test and tests with enzyme treated cells If the results of the most sensitive tests namely, the antiglobulin tests and/or test with enzyme treated cells, are negative, one may predict with certainty that the baby, even though Rh positive, will not be erythroblastotic, provided that other rare sensitizations, such as to the A and B agglutinogens or Kell factor, are also excluded When the result of the conglutination test is negative, but results of tests with enzyme treated cells or with the anti-globulin method are positive, the Rh positive baby will as a rule be so mildly affected that no treatment will be required When results of tests with the conglutination method are distinctly positive, the Rh positive baby will generally be affected, and the severity of the manifestations tend to parallel the antibody titer, though notable exceptions occur Positive results of the least sensitive method, namely, the blocking test, are usually of grave prognostic import, because this is often followed by a stillbirth or a severely affected erythroblastotic baby, though again exceptions may occur

RABIES VACCINATION FOR DOGS

To THE EDITOR —*Will a single shot' of rabies vaccine protect a dog from rabies? A local epidemic of rabies among wild animals prompts the question* *M.D , North Dakota*

ANSWER —The single injection method of rabies vaccination has been proved through long experience to provide adequate protection for dogs Annual revaccination is recommended, although it is possible that some of the newer vaccines will give immunity for considerably longer than one year During World War II, the United States Army Veterinary Corps had outstanding success with the three injection method of immunization (a course of three weekly injections) in dogs used by the armed forces, but this method cannot be recommended where public cooperation is required

TREATMENT FOR FRESH WOUNDS

To THE EDITOR —*Assuming that all other factors, such as suture material and gentleness are equal and as near ideal as possible which of the following methods is preferred in the treatment of fresh, clean intentional wounds in human beings (1) dry gauze for sponging without any irrigation of the wound, (2) sponges moistened in water and no irrigation (3) sponges moistened with water and irrigated with water, (4) sponges moistened in saline and no irrigation (5) sponges moistened in saline and irrigated with saline (6) sponges moistened in Ringer's solution and no irrigation, or (7) sponges moistened in Ringer's solution and irrigated with Ringer's solution?* *M.D Kentucky*

ANSWER —A fresh, clean intentional wound is best treated only with sponges moistened with isotonic (0 9%) sodium chloride solution Water should not be used, and Ringer s solution has no added advantage

NOCTURNAL CRAMPS

To THE EDITOR —*I have felt that the use of vitamin B in nocturnal cramps might help correct abnormal physiology in the muscle tissue but have been unable to substantiate this In vitamin B deficiency there is incomplete oxidation of glucose in muscle tissue with an increase in pyruvate in the blood Does this mean a local increase of pyruvic acid occurs in muscle in vitamin B deficiency? Would an increase of pyruvic acid in muscle tissue cause abnormal and sustained muscle contractions? What is the physiology of pyruvic acid in the human body?* *J R Burnett, M D , Effingham, Ill*

ANSWER —Peripheral neuritis is the most common pathologic lesion of thiamine deficiency, and tenderness of the muscles, notably in the calves, is often a striking symptom Cramps in the muscles have been complained of by patients suffering from grave and long-continued nutritive deficiency, notably of the vitamin B complex, but it is doubtful that the nocturnal cramps referred to, occurring under a variety of conditions, could be due to the accumulation of pyruvic acid in the muscles This substance increases in the body fluids during the altered metabolism of thiamine deficiency, but there is no evidence of a 'local increase of pyruvic acid" in muscle tissue The difficulties of thiamine deficiency go much further than the mere accumulation of the pyruvates The fate of pyruvic acid in the body is a long chemical story, adequately dealt with in the second edition of the 'Handbook of Nutrition" of the American Medical Association prepared under the auspices of the Council on Food and Nutrition (page 57)

The answers here published have been prepared by competent authorities They do not, however, represent the opinions of any official bodies unless specifically stated in the reply Anonymous communications and queries on postal cards cannot be answered Every letter *must contain the writer s* name and address, but these will be omitted on request

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RESPONSIBILITY OF THE SURGEON TO MODERN SOCIETY

CHAIRMAN'S ADDRESS

I S Ravdin, M D, Philadelphia

In the selection of a subject for the chairman's address to this section, I have taken one which does not deal with great achievements of surgery These are well known to our colleagues in the various branches of medicine and to the lay public as well, they need no praise, for they have added immeasurably to the comfort and well-being of our people In the therapy of some diseases and abnormalities internal medicine has become more and more surgical, while in others nonsurgical means of therapy now provide a safer and better means of achieving health than operation ever afforded The surgeon has long been sensitive to the changing therapy of disease, perhaps more so than his strictly medical colleagues

In the attack now being made on American medicine surgeons unfortunately have provided a considerable amount of the ammunition which is being used by those who would destroy medicine as it is, and should be, practiced In these days of uncertainty, it is incumbent on all of us to realize our duties and responsibilities to modern society We can no longer evade them, we can no longer remain silent about them, for to do this is to shirk our duty What I have to say applies to but a small segment of American surgeons, but the actions of this small group are now reflecting on surgeons as a whole

If surgeons are to improve their position in our modern society, if they are only to maintain the position which they have previously held, they must concern themselves with certain of these problems The very cornerstone upon which our democracy was founded was the rights of the individual Among those rights is that of every patient to expect good medical and surgical care The most thoughtful men in American medicine have accepted this principle for generations Such unanimity of opinion on any other precept has rarely been achieved in our democracy All surgeons can be held responsible for the derelictions of a small segment of our profession if we fail to attempt to do something about them

Many of the problems which now confront us are not new They confronted the Founding Fathers of this country and their fathers before them The earliest code of Hammurabi, promulgated 2,250 years B C, prescribed the conditions of practice and defined the fees which the physician could charge

Thoughtful surgeons are concerned with the fact that our hospitals and medical schools are accumulating mounting deficits We frequently record the fact that the rich and near rich no longer give freely to these institutions so necessary to our modern society And yet, a few surgeons are constantly alienating such people from providing the help which we have a right to expect them to give The truth is that some surgeons fees are higher than they ought to be This is true now, and it was true in Rome in the fourth century B C for it was recorded then that "   *where there is a question of fees, the medical officer must take as a standard not what men fearing death will agree to pay, but what men recovered from illness will offer* "

It is interesting to be reminded in retrospect that many of the problems that seem so new to us today are in reality old ones It merely is illustrative of the fact that the best men in our profession are frequently held responsible for the acts of a few inconsiderate men On Oct 21, 1639, the Colonial Assembly of Virginia took into consideration the excessive rates and prices exacted by practitioners of medicine and surgery To quote from the Ninth Act of the Assembly,

> It so happening through the said untolerable exactions that the hearts of divers masters were hardened rather to suffer their servants to perish for want of fitt meanes and applications than to employ griping and avaracious men It being apprehended by such masters who were more swaved by politic respects than by Christian duty or Charity Yet it must be admitted that the charges of the physician or surgeon exceed for the most part the purchase of the patient

The subject arose again and again, and in 1661 and 1736 colonial Virginia took further cognizance of the excessive and immoderate prices "exacted by diverse avaricious and griping practitioners in physic and surgery " At no time did colonial Virginia cast aspersions on the entire profession

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Read before the Section on Surgery General and Abdominal at the One Hundredth Annual Session of the American Medical Association Atlantic City June 14 1951

I was reminded of this aspect of our dereliction recently when a prominent lawyer came to see me He asked about a patient I had seen in consultation The patient had diabetic gangrene I advised amputation I saw the patient again several weeks later, the gangrene was above the knee I insisted that further delay was dangerous to life The amputation was done The surgeon sent a bill for $25,000 00 and the internist for $15,000 00 In medicine the adage of charging all the traffic will bear is immoral, and the surgeon who does this is doing a great disservice to his profession and to the institution in which he works The lawyer criticized the internist and surgeon severely, but how often do lawyers subject their clients to bills of this extent! It merely goes to prove that in our profession we are expected to be more sensitive to such immoralities, and we should be

We must admit that all is still not well in our profession We can never be sure that it ever will be, but we can, I am sure, continue to set standards which will remain the envy of the entire world We must be sure that the men who are permitted to do surgery, have been properly trained to do it To the extent that we fail in this objective, patients will not receive the full benefits which they have a right to expect Many patients are being subjected to needless operations, and preoperative and postoperative care is not always the best throughout the country as a whole The so-called successful surgeon is not always the best individual to do a particular operation, or to give the patient the full benefits that surgical science now has to offer Over and above all these matters, surgeons at times are not facing issues with their patients as they ought to face them—with candor, with honesty, and with a complete sense of the responsibilities which are incumbent upon the doctor to whom the patient entrusts his life These matters are of deep interest, not only to the patient—who, after all, is the consumer of the surgeon's effort—but to all those concerned with the best interests of medicine in this country These are matters which must concern the Fellows of this traditionally great Section

Surgical training varies greatly from one hospital to another A surgeon is never trained merely by assisting another surgeon, for to become technically proficient the young trainee must have the opportunity, under supervision, to do surgery He must, as his training is extended, be provided with increasing opportunity and responsibility In some institutions in this country, the responsibilities of the staff in the training program are not realized Young men following training frequently attach themselves, because of opportunity or necessity, to established surgeons They quickly assume the ways of working, the traits, good or bad, of the men with whom they are associated Accordingly, they will be either good or bad surgeons when on their own in the practice of surgery A deep realization of our responsibilities is necessary to all of us In no other way can we be sure that the young man who has completed his training will not default in either his capacity to do good for the public or his responsibility to the profession of surgery Technique will be learned at the operating table, judgment will be learned by years of training alongside men who have judgment, honesty of purpose, however, which is so important, will depend on the most careful selection of our trainees and upon the example to which we expose them

We hear much about fee-splitting in this country That it exists to a greater or lesser extent in many communities cannot be denied When fee-splitting is practiced, patients may be referred not to the surgeons best able to effect a cure, but to those who provide the referring physician with the largest share of the patient's fee We shudder when we read in our papers about the "kickback" in industry, and the "5 percenters", yet I wonder if all of us are at times lacking in social consciousness when we turn our backs on this iniquitous practice in surgery Young men recently out of the best of our surgical residencies often find it difficult to make a living if they resist the fee-splitting practice

Some answer must be found for the inequitable distribution of fees between internist or general practitioner and the surgeon, but the answer is not that of splitting fees The patient has every moral right to know what the fee he pays is for Young surgeons with principles must have the support of all of us in their attempt to establish themselves without succumbing to this practice The great organizations that represent surgery in this country must give more than lip service in disowning it, and individual surgeons who participate in this practice must be made to realize that they are destroying one of our most treasured possessions—the free conduct of our profession

It is frequently asked by patients and their families, "Is an operation necessary?" They have every right to ask this question It is asked frequently by thoughtful physicians and surgeons when they look at the schedules of operations in certain of our hospitals What are all the operations for chronic appendicitis, noncalculous cholecystitis and abdominal adhesions being done for? Are the organs which are being removed causing any of the symptoms which have brought the patient to the surgeon? Are not the adhesions at times due to a previous operation which in reality was not justified? The removal of an appendix for burning pain in the right lower quadrant will too often be followed by an operation for adhesions in six months or a year, and then by a cholecystectomy and another operation for adhesions Most of these operations are unnecessary, for the symptoms which these patients present are psychosomatic in origin, operation does not cure them

It is time we were frank about the "rape of the pelvis" The wholesale removal of ovaries and tubes and of uteri is all too frequently done without consideration of the harm which is being done the women involved Operations for retroversion are still being done by the hundreds for backache, and after operation, when the backache returns, the uterus is removed How often does a retroverted uterus really cause backache?

Recently I received a letter from one of my ex-residents about some of these practices He wrote

> Many undesirable practices have been encountered here as I am sure they must be encountered elsewhere I am happy to report to you that in spite of frequent temptations I have never compromised on a single principle I have turned down more surgery than I have done because I considered it unjustified even though the patients were referred for surgery I have angered a few by refusing to do ghost surgery which I consider to be a dreadful dishonesty but in so doing I have gained the respect of others When are you older men going to make the practice of surgery what it ought to be?

"Ghost surgery' in many of our communities has spread rapidly The general practitioner employs a surgeon to do the operation The surgeon sees the patient under the anesthesia in the operating room He has no part in the decision of whether operation is necessary, he does not control the postoperative care He lurks in the shadows selling his services The patient is led to believe that his own doctor did the operation, and very soon the doctor does begin to do such procedures, not because he is competent to do them, but because the patient believes he is and a hospital permits him to operate Such practices lead to the degradation of surgery It is fee-splitting in reverse It is not only immoral, it is dishonest

We must stop performing biopsies on breasts for chronic cystic disease in the absence of a dominant lump What do we gain by such a procedure? We must stop doing operations which cater to the whims of distraught patients, but which provide a poorer chance for five or 10 years' survival Conscience has been and must remain the motivating factor that controls our daily lives Recently a surgeon told a family that another surgeon who was to operate took too long for the operation, often did it in stages, and in the end would leave the patient altered for life with a "dreadful colostomy ' I cannot convince myself that the operation he recommended for a lesion 6 cm from the anus was as good as the traditional Miles operation

Consultants are often necessary but the tendency to call them when they are not required adds to the cost of medical care What is even worse is the tendency, at times resorted to of forcing the use of a particular group of consultants The patient and his family should have a free choice of consultants

All operators are not really surgeons The technical aspects of an operation represent but one facet of surgical care The surgeon must prepare his patient to withstand the assault of anesthesia and operation, and he must direct the postoperative care It is highly likely that more lives will be saved by intelligent preoperative and postoperative care than will be saved by variations in the methods used for a particular operation The decision of when to operate and what operation to *perform* are often matters of lifesaving character They are decisions which surgeons are prepared to make The operator skillful as he may be technically is often not as well prepared to make them

The responsibility of the surgeon should not cease when the patient leaves the hospital Follow-up studies carefully made are the only way of assessing the end results of our work We must recognize that careful follow-up studies provide the sole means of ascertaining the value to the patient of what we have done We must recognize that surgical care is only a part of the broad aspect of community care It must be always exercised in the public interest, and it usually is

Surgical mortality reporting is shockingly dissimilar throughout this country Editors must establish uniform criteria for mortality reporting but when all is said and done, mortality data are not the sole criteria upon which to pass judgment What is equally, if not more important is how long the patients live free of symptoms following a particular operation

I should also like to bring up the manner in which we continue to handle cancer in our discussions with patients A patient with a radical mastectomy or a permanent colostomy knows that he or she has had cancer and we fail to meet our obligation when we deny it What a relief, as a rule, it is to the patients when we are willing to discuss the future with them

These matters I have discussed are concerning many thoughtful people in and out of medicine and surgery It is for us to continue to formulate the policies which will provide a solution for them It will be short-sighted on our part to fail to acknowledge that they concern us and to do nothing about them Ours is a social as well as a scientific or biological responsibility We have every right to expect the continued freedom of our profession, and as long as we have *it we will continue to accept our* responsibility to set our house in order We have increased our usefulness to the citizens of this great country Each of us, I am sure, realizes that his freedom of action depends upon the continued realization of his responsibilities in the improvement of the health and welfare of his people We have a great heritage We must protect and nourish it

3400 Spruce St

Cybernetics.—Feed back offers a reasonable explanation of certain functions of the nervous system, whose derangement could account for observed symptoms and signs in disease Whether *feed back* pathways are, in fact, so used in the nervous system and to what extent they are a fundamental method of co-ordination and control remains to be established The *study* of the intact nervous system, with all its possible feed back pathways will be *a formidable* undertaking We can, however recognize that the brain is *in the* structure and function of its individual neurones and their synapses wonderfully constructed to act as a complex system including intricate feed back pathways—the miniature circuits permitting a vast complexity in a very small space Retention of information, resembling memory, is a necessary function of the automatic computing machine, *and is secured* by the use of endlessly repeating impulses in closed circuits a dynamic recording process depending on a circus movement Circus movement is no new conception in physiology we can recognize it under certain conditions as an inherent property of cardiac muscle It has been suggested that circus movement *in* closed neurone circuits so-called reverberating circuits may be a basic element of cerebral function perhaps concerned amongst other activities with memory and recollection —Alan Thompson Cybernetics and Animal Integration *Irish Journal of Medical Science*, July, 1951

CHANGING MILITARY MEDICAL PICTURE IN THE UNITED STATES

Richard L Meiling, M D, Columbus, Ohio

The devotion of the American medical profession to the nation's service in time of war as in time of peace parallels the course and history of the republic and is indeed a source of justifiable pride to every member of the profession The military medical services trace their beginning to the first days of the Army at Boston in 1775 Their remarkable development is illustrated when it is remembered that Washington's army throughout the whole seven years of the American Revolution probably did not exceed 5,000 men on the average, while in June, 1950, prior to the Korean conflict, the Army, Navy, and Air Force had more than 6,000 physicians on the active duty roster Today the number of physicians on active duty exceeds 12,000

The daily lives of the majority of the civilians during the revolutionary days were little altered by the military demands It is to be recalled that during World War I America's daily life went on almost as usual with little change in the standard or manner of living The impact of World War II changed not only the standards and manner of living but also the political, economic, and foreign policies of the country The military medical picture has of necessity paralleled the changing foreign and domestic policies of the government The attention of both military and civilian physicians must be focused on certain fundamental problems caused by the changing political thoughts of their fellow citizens and the resulting responsibility which physicians owe their country, their patients, and their profession

Very few members of the medical profession concerned themselves with the changing foreign and domestic policy of the United States from 1945 to 1950 Nor did they watch the foreign policies of other world powers As the fighting ceased in 1945, the hopes of all were high The citizens of the United States—ever optimistic—refused to believe that any reasonable person would plan another bloody struggle just after the conclusion of a war which had cost the belligerents more than 20 million lives and had led to the development of such new destructive weapons as the guided missile, the atomic bomb, and so forth On the strength of these high hopes for the future, the armed forces and the nation demobilized both physically and mentally Everyone hoped for the return to "normal"

In the field of medical science our country embarked upon a heretofore undreamed of expansion in both private and governmental hospitals and medical research programs The armed forces, the Atomic Energy Commission, the Veterans Administration, and the United States Public Health Service through the National Institutes of Health developed a competitive field of endeavor with university and metropolitan hospitals and institutions for trained personnel and facilities in both laboratory and clinical research Graduate medical education originally planned as an advanced educational program providing stability and professional proficiency for both civilian and governmental medical services became a "procurement program" with competition as to salary, rank, and promises of security to be found in "career planning" Patients were sought to maintain clinical and graduate teaching programs Governmental hospitals and medical programs were in some instances providing duplicate services Corrective action was necessary and has been taken

The citizenry of the United States lost sight of the danger signs which were first apparent in 1945 when the "Russian allies" began their now famous "blocking procedures" over the German surrender in Italy, the solution of the Trieste problem, the employment of the Red Cross in Eastern Europe, and the Potsdam conference Perhaps the high ideals expressed in the United Nations' charter, in which the signers declared themselves to be " determined to save succeeding generations from the scourge of war "lulled "John Q Citizen" into false hopes One and all nobly resolved that it should never happen again

In 1947, after almost two years of hearings and debate, congress enacted the National Security Act (often referred to as the Unification Act) This, then, was the cornerstone upon which the total defense of the United States was to be built, it covered not only the military forces but national resources, industry, and manpower as well The civilian and military medical leaders, however, failed to comprehend the significance of this legislation as related to medical and health programs A physician of the character and vision of Dr Franklin H Martin of World War I was needed President Wilson in 1916 appointed him a member of the Advisory Commission of the Council of National Defense, where he provided medical advice at the cabinet level during World War I The wisdom, vision, stature, and patriotism necessary to present sound medical advice and to assure its being heard by our legislative, executive, and military leaders was, unfortunately, not forthcoming in 1946 and 1947

When, in 1947, the hope for a peaceful future began to fade, our nation approved the Truman Doctrine and aid for Greece and Turkey and then started work on the European Recovery Program (Marshall Plan) Widespread confidence, however, in American "know how" prevented the full realization by most people of future dangers The Soviet Union was generally considered incapable for some time of producing either atomic bombs or long-range bombers with which to deliver them

In 1948 the writing on the wall became progessively clearer, but the temper of the time remained unattuned to foresighted precautions The Czechoslovakian *coup d'état,* the Italian electorial struggle, and finally the Berlin blockade all furnished greater evidence of the Soviet Union's intentions As an answer to Soviet actions, congress enacted legislation to assist European nations

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Former Chairman of the Armed Forces Medical Policy Council Office of the Secretary of Defense

Read before the Section on Miscellaneous Topics Sessions on Military Medicine at the One Hundredth Annual Session of the American Medical Association Atlantic City June 14 1951 in their economic recovery and to start the plans for a North Atlantic Treaty and the military defense assistance program The necessity for an expanded military establishment was not yet recognized Thus, the major problem of the armed forces medical services was to develop coordinated plans and practice the utmost economy in order to obtain the greatest possible efficiency

In the operational field the rapidly changing international situation made increased strength an essential factor Since it could not be obtained by immediate expansion, the armed forces strength had to be gained by efficiency, economy, and management control Thus for two years the Department of Defense searched for ways and means to make each tax dollar give the nation more in combat readiness and striking power with which to meet possible emergencies It was a long, difficult task trespassing on time-honored customs and traditions of the services and misunderstood both purposely and through lack of understanding by many, both in and out of uniform Despite the sudden termination of this program following the invasion of South Korea in June, 1950, it yielded results which have already paid dividends for American forces and will continue to pay dividends in the days to come

Economy, efficiency, and management control are virtues to be sought by the military services regardless of the size of the budget They are necessities in areas of limited national resources, especially in the medical and health services To meet the need for a top level medical coordinating agency, the Secretary of Defense in January, 1948, appointed the Committee on Medical and Hospital Services of the Armed Forces (Hawley Board) composed of the two Surgeons General, the Air Surgeon, and Dr Paul Hawley This group was handicapped from the very beginning by the fact that the members were technical staff officers without authority to act in the name of their services or departments at the Secretary of Defense level The recommendations of this committee were subject to lengthy review on all echelons within the three military departments before they were finally given to the authors themselves, in their roles as Surgeons General in the respective services, for further study and comment on what they had originally recommended This committee was abolished in July, 1949

It was in the summer of 1948 that the Hoover Commission s Task Force on National Security (Eberstadt Committee) reviewed the organization of the national military establishment Shortcomings in the field of medical and health affairs became most evident to this lay and professional group Likewise, a task force studying federal medical services (Voorhees Committee) presented recommendations concerning reorganization of the military medical services The first Secretary of Defense, the late James Forrestal sought the advice of the Eberstadt Task Force and the counsel of several medical leaders He wanted a joint civilian-military medical advisory group to advise the Secretary of Defense on medical and health affairs of the armed forces and so the Armed Forces Medical Advisory Committee was appointed in November, 1948 The chairman Mr Charles P Cooper, was also named deputy to the Secretary of Defense for health matters which position he held until July 6 1949

In May, 1949, the Secretary of Defense established, on the recommendation of the Armed Forces Medical Advisory Committee, the Office of Medical Services headed by a civilian physician with the title of Director of Medical Services The responsibility for medical policy and program development and control was vested in the Director of Medical Services He established an advisory group composed of the three Surgeons General and his immediate staff With the advent of the Korean conflict, the Chief Medical Director of the Veterans Administration and the Surgeon General of the United States Public Health Service were invited to attend all meetings as observers, thus formalizing interagency medical policy discussions on defense matters for the first time

In January, 1951, the importance of medical coordination at the Secretary of Defense level was further recognized by the establishment of the Armed Forces Medical Policy Council The duties of the Armed Forces Medical Advisory Committee and the Office of Medical Services were transferred to this new council

This council, representing our present top level medical policy organization in the Department of Defense, is chairmaned by a civilian physician and is composed of the three Surgeons General and three civilian leaders in the medical and health fields Maj Gen George E Armstrong, M C, U S A, Rear Adm Herbert L Pugh, M C, U S N, Maj Gen Harry G Armstrong, M C, U S A A F, W Randolph Lovelace, II, M D, Isidor S Ravdin, M D, James P Hollers, D D S, and myself, the first chairman [1] The civilian chairman is the assistant to the Secretary of Defense on all medical and health matters, thus facilitating his daily working relations with the military departments, the agencies, boards, councils, and committees of the Department of Defense He is also vested with the authority of direct liaison with outside agencies concerned with medical and health matters There are many of these, such as the Bureau of the Budget, Atomic Energy Commission, United States Public Health Service, National Institute of Health, Veterans Administration, National Security Resources Board, Office of Defense Mobilization, Selective Service, National Research Council, National Science Foundation, American National Red Cross, and also the various professional organizations In medical and health problems, policy control within the Department of Defense has been established and maintained at the level of the Secretary of Defense

Perhaps the most difficult task was to develop an understanding by both professional and lay personnel of the changing world affairs and the urgent need for combat-ready military medical services The public press, radio, and television have presented first hand information on the military medical problems and successes in Korea, at other overseas areas, and here at home The record speaks for itself The military medical services have met the demands of the Korean conflict, the doubling of our military strength in nine short months, and the deployment of troops to overseas areas by bettering even the outstanding medical achievements of World

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[1] I resigned effective July 1 1951 and Dr W Randolph Lovelace II was appointed chairman effective July 1 1951 Alfred Shands M D was appointed a member of the Armed Forces Medical Policy Council effective July 1 1951

War II, which were recognized as the acme of medical advancement in the military field

The challenge which confronts the United States today is probably the greatest which has been encountered in the history of the country Dark days were experienced in the Revolutionary War and in the War of 1812, and both sides experienced desperate moments during the Civil War The United States entered the two world wars when the might of the enemy was at its peak On all these occasions, however, the issue was clear-cut, the objective was comparatively simple By mobilizing the full strength of the nation and joining in a common effort, it was evident that those emergencies could be brought to an end, with the job done, the citizen soldiers, sailors, airmen, and civilians could return to their former pursuits and live happily ever after

The present crisis is of an entirely different type The United States is facing the severe test of having to devote the same type of effort and sacrifice to prevent a third world war that in the past was devoted to winning a war This is a novel experience for American citizens They must and can meet this challenge if each recognizes the import, the urgency, and, above all, the need for individual sacrifice, not merely in taxes but in time effort, and thought devoted to the common cause

The foreign and military policies of the United States are united on three basic objectives, which Gen Bradley recently expressed as follows

> 1 We will protect and maintain our form of government and our way of life against any challenge and at any cost 2 We seek peace We will not provoke war We will not wage a preventive war But we will not follow the path of appeasement 3 We seek peace not only for ourselves but for all others We therefore support the United Nations

The Secretary of Defense, Gen Marshall, has stated that the government is now thinking in terms of a possible 10-year tension, a prolonged tension, rather than full-fledged war, during which the strength and resources of the nation can be built to sufficient size to provide adequate national protection

What then does this mean to the medical profession? First and foremost, the armed forces will require approximately 13,000 physicians continually on active duty[2] This is based on the ratio of 3 7 physicians per 1,000 troop strength recommended by the Health Resources Advisory Committee (Rusk Committee) of the Office of Defense Mobilization and concurred in by the Department of Defense Congress, on recommendation of the medical and dental professional associations, enacted Public Law 779[3] (the physician and dentist draft bill) as a temporary "control measure" to assure by legislation the availability of sufficient medical manpower to meet the needs of the armed forces Such manpower control should not be accepted as permanent Some new means to meet this military requirement over a period of 10 years must be developed The merits of the plans currently operating in other democratic countries might be carefully considered In these countries each medical graduate serves his country for a prescribed period of time, both during academic vacation and after completion of his medical training, the same as does each 18- or 19-year-old under Universal Military Service This can be in several small periods or in one single period of time, depending on individual and military needs Such a plan has greater merit than to expand overly the regular military medical services or to interrupt the academic programs of our universities for two full years of training at the age of 18 in order to meet the anticipated military medical requirements With a force of 3½ million men under arms in 1951, in comparison with a force of 185,000 in 1938, many of the coveted traditions of the services must give way to practical considerations in the best interests of the nation as a whole Today no United States military patient is more than 30 to 36 flying hours from the specialized and definitive care hospitals of continental United States It is wasteful of the limited national resources to build, sufficiently staff, or operate duplicating systems of specialized and definitive care hospitals in overseas areas and continental United States as was done in World War II Each military patient overseas requires five able-bodied noncombatants to provide for him Each of these persons requires approximately 0 8 measurement tons of supplies (food, clothing, and so forth) every 30 days Thus, to care for one patient overseas for 30 days requires approximately 4 8 measurement tons of supplies, which must be shipped by air or water to the overseas theater Military commanders recognize these facts and expect medical plans to be developed with full consideration given to reducing to a minimum these requirements

With the rapid movement of patients back to the United States careful screening must be accomplished at overseas areas Some changes in the present accepted surgical and medical treatment methods may be forthcoming to meet the patient needs and professional requirements as air evacuation is utilized to its maximum For example, orthopedic patients might be transported to the United States prior to permanent fixation and the application of traction devices, plastic surgery may be delayed until arrival in the United States, and so forth

As soldiers, sailors, and airmen experience the same excellent medical care and treatment in all hospitals of the armed forces, the resistance to joint utilization of military hospitals of one service or the other will be reduced to a minimum In November, 1950, more than 7,000 military patients were in service hospitals (in the United States) other than those of their own parent service No complaints about medical care or treatment were received from these patients

Military patients who may not be returning to active duty can be transferred without delay to the Veterans Administration hospitals, as directed by the President in January, 1951, thus utilizing the excellent hospital facilities of the Veterans Administration for these service-connected patients and relieving the armed forces of this responsibility The new Veterans Administration hospital system of approximately 130,000 beds is an addition to the governmental medical services since World War II which must be fully considered in all military planning

The United States forces together with members of the armed forces of some 16 nations fighting in Korea have given a preview of the medical and hospital coordination problems of an international military force The development of the North Atlantic Pact Nations' Forces in

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[2] Current strength of the armed forces is 3½ million

[3] Further amended and extended by Public Law 51 82d Congress

Europe poses still additional problems in the medical field These problems must be recognized, and their solution should not be attempted on the basis of national prejudices, provincialism, or selfish pride in the medical standards or advancements of individual countries Full recognition of the medical programs, customs, and policies of participating allies is as necessary as recognition of the military proficiency of the participating allied countries and leaders The development of a successful military operation under coordinated command requires the fullest cooperation regardless of the nationality of the commander his staff, or his medical chiefs

Civilian and military physicians of the United States can and must make adjustments to meet the new and changing order in which the citizenry of our country now live The "teamwork" of military and civilian physicians will find further expression in the years to come in the Sessions on Military Medicine of the Scientific Assembly of the American Medical Association It is fitting and just that this forum has been established There is no sharp line of demarcation between military and civilian medicine Physicians in each must understand the problems of the other and give full recognition to the achievements made

Physicians have ever been in the forefront in our nation's service In the years of tension ahead, each physician must keep a clear vision, a sound professional approach to all problems, and place patriotism above self-interest or vested interests Return to the "normal" of the past is an impossibility We physicians are citizens of a nation recognized as the world leader Our duties as citizens of the United States demand that we be as well informed on domestic, economic, military, and foreign affairs as on professional and scientific advancements throughout the medical world

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EFFECT OF CORTICOTROPIN (ACTH) IN CHRONIC ULCERATIVE COLITIS

OBSERVATIONS IN FORTY PATIENTS

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and
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The remarkable influence of corticotropin (ACTH) and cortisone on the course of certain diseases of obscure pathogenesis[1] has stimulated interest in the effects of the drugs on ulcerative colitis The present paper summarizes our experience with corticotropin in the treatment of 40 patients, and with cortisone in five patients, during the period of January, 1950 to June, 1951 Preliminary observations in smaller groups of cases have been presented elsewhere by us[2] and by others[3] The results to date suggest that corticotropin may be a valuable adjunct in therapy and reverse dramatically the unfavorable progression of the disease Cortisone, in the quantities used appears to be considerably less effective

PATIENTS AND METHOD OF STUDY

The diagnosis of ulcerative colitis was established on the basis of clinical history, proctoscopic and roentgen findings and the meticulous laboratory exclusion of recognized pathogenic agents Most patients had been under prolonged observation and their course prior to corticotropin administration was known The severity of the disease was estimated as mild in six, moderate in 12, and severe or unusually serious in 22 All had undergone extensive and varied medical treatment without sustained improvement A history of allergic disorders—ragweed hayfever, bronchial asthma—was elicited in seven patients, arthritis in seven, rheumatic fever in two, and glomerulonephritis in two One patient previously had undergone resection of small bowel for regional enteritis Ulcerative colitis had been present also in the mother, and in the brother, respectively, of two patients

The effects of corticotropin were determined by carefully controlled clinical studies and by certain objective measurements The general plan of investigation in 28 patients included the following stages (1) an initial control period during treatment with rest, sedation, and bland diet, (2) the intramuscular injection of placebos (saline solution or distilled water) dispensed from corticotropin-labeled bottles and represented to the patients as such, (3) the administration of corticotropin, the transition from placebo to hormone being made without the knowledge of the patient, (4) a post-corticotropin placebo period, and (5) a return to original therapy Placebos were omitted in 12 cases, chiefly because the severity of the illness necessitated early definitive therapy As an additional control, two patients received amphetamine (benzedrine®) sulfate intramuscularly, 20 mg daily, for four and eight days, respectively Three patients received, respectively, (1) lipoadrenal extract (25 cc in five days), (2) adrenal cortical extract (90 cc in eight days), and (3) desoxycorticosterone acetate and ascorbic acid Ascorbic acid alone was given by mouth to five patients in doses ranging from 400 mg to 12 gm daily These medications did not demonstrably improve the course of the disease The rectal mucosa was inspected proctoscopically at intervals of from five to seven

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From the Frank Billings Medical Clinic Department of Medicine University of Chicago

This study including the purchase of corticotropin was to a considerable extent made possible by the Leo Wallach Fund for research in ulcerative colitis

Read before the Joint Session of the Section on Pathology and Physiology and the Section on Gastro-Enterology and Proctology at the One Hundredth Annual Session of the American Medical Association Atlantic City June 15 1951

Portions of this study have been presented previously at the 23rd Annual Meeting of the Central Society for Clinical Research Chicago Nov 3 1950 and at the Midwest Regional Meeting American College of Physicians Madison Wis Nov 11 1950 days Roentgen examination of the colon was repeated after treatment in 11 cases

With one exception, all patients were treated in the hospital Both the Armour and Wilson preparations of pituitary adrenocorticotropic hormone were administered[4] The dosage varied, depending on individual requirements and the potency of different lots of corticotropin Usually 25 (Armour) or 20 (Wilson) mg were injected intramuscularly every six hours Larger amounts were administered occasionally, subsequent reductions were determined by the individual clinical response The total intake of corticotropin was less than 1 gm in six patients, between 1 and 2 gm in 18, between 2 and 3 gm in eight, between 3 and 4 gm in three, between 4 and 5 gm in three, and exceeded 5 gm in two patients, the largest quantity given was 7 92 gm during a combined period of 126 days The duration of treatment was less than three weeks in five, between three and four weeks in 12, and between 30 and 126 days in 23 patients

TABLE 1 —*Clinical Response to Corticotropin (ACTH) in Chronic Ulcerative Colitis*

Severity of the Disease	No of Patients	Response During Treatment				Sustained Remissions (35 Patients)
		Good	Moderate	Slight	None	
Mild	6	4	1		1	4
Moderate	12	8	3	1		5
Severe	22	15	3	1	3	6
Totals	40	27	7	2	4	15

Eosinophile Response —The circulating eosinophiles in the peripheral blood were measured every one to three days before, during, and after administration of corticotropin[5] The initial counts were within the normal range in all but five cases A definite, though variable, eosinopenia occurred during corticotropin therapy in 38 patients The initial eosinophile counts served as a practical index of corticotropin effect However, the eosinophile response did not correlate directly with the clinical result, some patients maintained their improvement despite rising eosinophile levels, others manifested little or no clinical response in the presence of significant eosinopenia In 23 patients the eosinophile counts increased as the quantity of corticotropin was lowered In several patients the eosinopenia during repeated courses of treatment was less pronounced than had been observed earlier The "escape" phenomenon may reflect inadequate dosage, adrenal fatigue, or the development of a state refractory to corticotropin

CLINICAL RESPONSE TO CORTICOTROPIN

Placebos —The enthusiastic administration of placebos had no demonstrable beneficial effects In one patient, who was fearful of corticotropin, the injection of placebos represented as corticotropin led to severe exacerbation of the diarrhea, symptoms subsided with the administration of corticotropin The concealed transition from corticotropin to distilled water in several patients promptly resulted in recurrent diarrhea The lack of significant clinical response to placebos was not anticipated and is presumptive evidence against the possible psychotherapeutic effects of corticotropin

Effects of Corticotropin —The clinical response during corticotropin was considered good in 27, moderate in seven, slight in two, and nil in four patients, beneficial effects of varying degree thus occurred in 36 of the 40 patients (Table 1) The remissions were prompt in 24 and gradual in 12 patients Improvement was characterized by the subsidence of abdominal distress and rapid disappearance of the bloody diarrhea The number of stools diminished in 36 patients and the consistency of the bowel movements improved in 34 (Chart 1) One patient enjoyed excellent health during 26 days without a bowel movement Fecal impactions developed in six patients Since bowel activity also may decrease during corticotropin therapy in patients without gastrointestinal disease or with diarrhea of functional origin, the effect is not specific for ulcerative colitis, however, the subsidence of diarrhea during corticotropin therapy in these patients was striking The clinical improvement was no more complete than had been observed previously with other treatment, but it was more rapid and occasionally

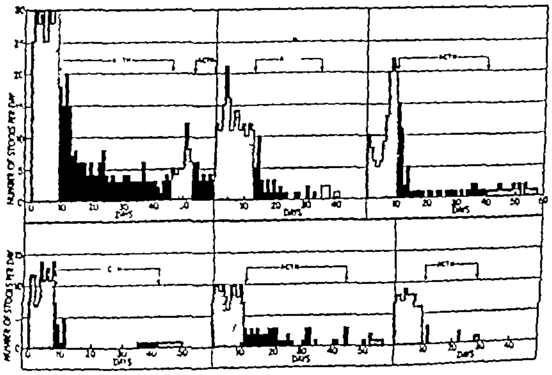

Chart 1 —Corticotropin (ACTH) in ulcerative colitis—disappearance of diarrhea in six patients (G B C. B L. T M S R O and W P) during corticotropin (ACTH) administration Each square shows the course of one patient

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[1] Hench P S Kendall E C Slocumb C H and Polley H F The Effect of a Hormone of the Adrenal Cortex (17 Hydroxy 11 Dihydrocorticosterone Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis Preliminary Report Proc Staff Meet. Mayo Clin **24** 181 1949 Thorn G W and Others The Clinical Usefulness of ACTH and Cortisone New England J Med **242** 783 824 and 865 1950

[2] Kirsner J B Palmer W L and Klotz, A P ACTH and Cortisone in Chronic Ulcerative Colitis A Comparison of Clinical Effects Proc Central Soc Clin Res **23** 58 1950 Kirsner J B and Palmer W L ACTH in Ulcerative Colitis Report of Progress Gastroenterology **18** 143 (May) 1951 Kirsner J B in discussion on Halsted J A and others Clinical Effects of ACTH in Chronic Ulcerative Colitis Proceedings of the Second Clinical ACTH Conference ed by J R Mote Philadelphia The Blakiston Company 1951 Vol 2 p 500

[3] DuToit C H and Bauer W The Effect of ACTH on Ulcerative Colitis Proceedings of the First Clinical ACTH Conference ed by J R Mote Philadelphia The Blakiston Company 1950 p 459 Dearing W H and Brown P W Experiences with Cortisone and ACTH in Chronic Ulcerative Colitis Proc Staff Meet Mayo Clin **25** 486 1950 Rosmiller H R Brown C H and Ecker J A Effect of ACTH on Non Specific Ulcerative Colitis Gastroenterology **17**: 25 1951 Gray S J Reifenstein R W Young J C G and Benson J A Jr The Use of ACTH in the Treatment of Ulcerative Colitis and Regional Enteritis Proceedings of the Second Clinical ACTH Conference ed by J R Mote Philadelphia the Blakiston Company 1951 vol 2 p 473 Gray S J Reifenstein R. W Benson J A Jr and Young J C G Treatment of Ulcerative Colitis and Regional Enteritis with ACTH Significance of Fecal Lysozyme A M A Arch Int Med **87** 646 (May) 1951 Halsted J A Adams W S Sloan S Walters R. L and Bassett S H Clinical Effects of ACTH in Ulcerative Colitis Proceedings of the Second Clinical ACTH Conference ed by J R Mote Philadelphia The Blakiston Company 1951 vol 2 p 489

[4] The Armour Laboratories 1425 W 42nd St Chicago 9 and the Wilson Laboratories Division of Wilson & Co Inc. 4221 S Western Ave Chicago 9 very kindly provided some of the ACTH used in this study

[5] Randolph T G Differentiation and Enumeration of Eosinophils in the Counting Chamber with a Glycol Stain A Valuable Technique in Appraising ACTH Dosage J Lab & Clin Med **34**: 1696 1949

dramatic As one patient remarked, "ACTH accomplished in two days what other treatment required six or eight weeks to do " The appetite improved in 36 patients, and daily intakes of 3,500 to 4,500 calories were common, two young men consumed in excess of 8,000 calories per 24 hours The ravenous appetite was in striking contrast to the dietetic problems encountered earlier in these patients A sustained gain in weight was apparent in many instances after the discontinuance of corticotropin

Among the four patients not responding to corticotropin, one had been admitted critically ill and subsequently was found to have had a perforation of the cecum with generalized peritonitis Persistent emotional problems probably retarded clinical progress in three patients, one later underwent a partial colectomy The complications of severe hypokalemia and probable sensitivity to corticotropin necessitated termination of therapy in two of this group The latter case is of considerable interest This patient, a 21-year-old woman with ulcerative colitis, early scleroderma, and rheumatoid arthritis of three years' duration, had improved elsewhere in June, 1950, during the administration of 1,005 mg of corticotropin within approximately three weeks' time Symptoms recurred five days later The present treatment consisted of 1,360 mg of Wilson's corticotropin administered during the period from May 1 to May 10, 1951 The dose had been increased to 200 mg daily on May 6, but there was no significant eosinopenia On May 10 severe angioneurotic edema of the face and extensive urticaria developed These manifestations subsided promptly after the withdrawal of corticotropin and the administration of antihistaminic drugs Subsequent scratch and intradermal tests revealed pronounced dermal sensitivity to both the Wilson and Armour preparations of corticotropin and to corticotropin of sheep origin (Armour) The patient had not known of any allergic tendencies prior to this episode Similar reactions have been noted by Brown and Hollander [6] and others with corticotropin of pork origin, the substitution of beef corticotropin produced no allergic reactions

Emotional conflicts also seemed to interfere with clinical progress in the two patients responding only slightly to corticotropin Symptoms in one case partially subsided during the use of sulfaguanidine The other patient subsequently improved during the daily intravenous administration of 20 mg of corticotropin given over a period of four to eight hours in 500 to 1,000 cc of 5% dextrose in distilled water The eosinophile count decreased significantly after each injection The number of bowel movements diminished from 10 to between two and four daily, and improved in consistency, there was corresponding subjective improvement The possibilities of intravenous corticotropin therapy in ulcerative colitis are being investigated further

Temperature and Pulse —The elevated temperature and pulse rate in 22 patients returned to normal levels within 12 to 18 hours after the initiation of corticotropin therapy In one patient with a large abscess in the buttocks the temperature and pulse remained normal for approximately two weeks but then rose during the continued administration of corticotropin

Emotional Reactions —A sense of well-being developed in 32 patients, in 12 it approached a state of euphoria These emotional upsurges seemed to accompany rather than precede the physical improvement Conversely, the clinical response was not determined by the euphoric state, for many patients improved in its absence However, in a disease such as ulcerative colitis the complex psychogenic and somatic interrelationships cannot be separated clearly One patient remarked, 'The emotional problems, everything, seem to vanish when my bowels are OK " Another commented, "I feel like a normal person again, I have cleaned my desk and am ready for school work " A third patient with very severe colitis stated "ACTH has made me love life, it has taught me that I can be a human being when my bowel is under control Whatever its physical effects, ACTH has had this great emotional impact " This striking response vanished after the withdrawal of the drug

Insomnia and restlessness were noted by 18 patients Emotional disturbances of the type generally associated with ulcerative colitis, though less obvious during corticotropin therapy, remained sufficiently prominent in seven patients as to retard clinical improvement Seven persons appeared more disturbed emotionally during treatment, hypokalemia had developed in three of this group One young man unaccountably committed suicide, though by his own appraisal he had improved considerably, the dose of corticotropin was relatively small and the serum electrolytes were normal Corticotropin may conceal the overt manifestations of emotional conflict, but it does not seem to dissolve the conflict Emotional disturbances usually persist after corticotropin therapy and may precipitate recurrence of the disease

Proctoscopy —Proctoscopy before treatment demonstrated in most instances edema, friability, bleeding, and granularity of the rectal mucosa with bloody fluid and mucopurulent exudate The findings were considered severe in 29 patients, moderate in five, and mild in six Improvement was noted in 34 of the 36 patients reexamined at frequent intervals, the change was pronounced in 20, moderate in nine, and slight in five The earliest evidence of improvement, sometimes occurring within several days, was disappearance of the excess fluid and mucosal edema, the friability and bleeding subsided more gradually, the granularity persisted Three or four weeks usually elapsed before the proctoscopic evidence of improvement was unequivocal

Roentgen Observations —Involvement of the colon was demonstrated roentgenologically in 32 of the 37 patients examined before treatment The entire colon appeared diseased in 21 (including the terminal ileum in two, extensive ulceration in two, and stenosis in one), involvement extended to the hepatic flexure in six and to the splenic flexure only in five patients Eleven patients were reexamined after corticotropin therapy There was no change in eight, the involvement appeared less pronounced in three cases, including one patient in whom extensive ulceration of the left colon disappeared in a spectacular manner Significant roentgen improvement in ulcerative colitis usually is not demonstrable until after prolonged remission of the disease [8], the method, therefore, is not applicable to the study of the relatively early effects of corticotropin

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[6] Brown E M Jr and Hollander J L Allergy to ACTH and the Use of Beef ACTH Proceedings of the Second Clinical ACTH Conference ed by J R. Mote Philadelphia, The Blakiston Company 1951 vol 2 p 391

[7] Gordon E S Kelsey C. and Meyer E. S Adrenal Stimulation by Intravenous ACTH Proceedings of the Second Clinical ACTH Conference ed by J R. Mote Philadelphia The Blakiston Company 1951 vol 2, p 30

LABORATORY RESPONSE TO CORTICOTROPIN

The sedimentation rate initially was normal in seven, and elevated slightly or moderately in 27 patients During corticotropin therapy the sedimentation rate was unchanged in 10 and decreased to normal in 17, it again rose after treatment in 11 of this latter group The concentration of nonspecific hyaluronidase inhibitor in the blood serum was measured at frequent intervals in two patients [9] The levels tended to decrease during corticotropin therapy, in one patient the pattern of response was similar to that observed in rheumatic fever

Hyperactivity of the parasympathetic nervous system with resultant hypermotility of the bowel has been implicated in the pathogenesis of ulcerative colitis The neurogenic hyperfunction may be accompanied with an increased concentration of acetylcholine and, correspondingly, cholinesterase at the myoneural junctions Whereas serum cholinesterase parallels the state of nutrition, erythrocyte cholinesterase may reflect cholinesterase at the myoneural junctions Measurements in our laboratory, utilizing the Warburg manometric technique, indicated consistently elevated values in active ulcerative colitis and a return to normal levels during improvement with corticotropin [10] (Chart 2)

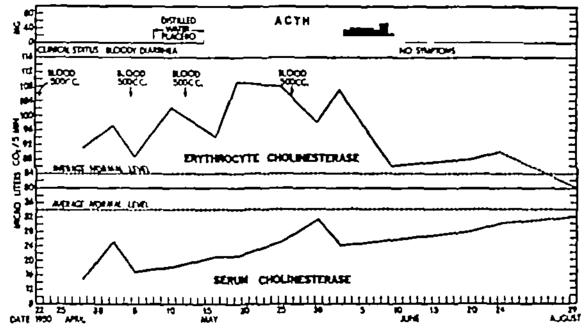

Chart 2 —Return to normal erythrocyte and serum cholinesterase levels during improvement in patient C M M a man aged 22 who had ulcerative colitis for 1¼ years

The daily outputs of feces were measured before, during, and after treatment in 22 patients (18 men and four women) For this purpose, patients deposited all bowel movements directly into weighed glass jars contained in bedside commodes Fecal outputs (grams per 24 hours) were excessive in almost all instances, and did not diminish during the administration of placebos Fecal excretion decreased significantly during corticotropin therapy in 17 patients (Chart 3), the outputs again rose in nine after the discontinuation of treatment Fecal nitrogen was measured continuously in 10 patients As demonstrated previously,[11] the outputs in active ulcerative colitis are much higher than normal, nitrogen excretion in several cases of this series approximated 8 to 11 gm per 24 hours During corticotropin therapy the 24-hour outputs of fecal nitrogen decreased significantly in the 10 patients, although not always to normal levels (Chart 4), the concentration of nitrogen per gram of feces diminished to a lesser extent

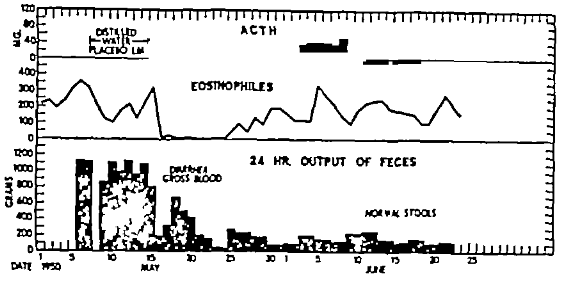

Chart 3 —Prompt and sustained improvement with administration of corticotropin (ACTH) in patient C M M

Lysozyme in the feces was measured in four patients In accord with previous observations,[12] the outputs greatly exceeded the normal range Decreases of varying magnitude were noted during corticotropin therapy Similar trends may be observed during subsidence of the active disease with other therapy, hence, they do not appear specific for corticotropin

Urinary Nitrogen —The profound alterations in protein metabolism during corticotropin therapy are shown in part by an increased urinary excretion of nitrogen

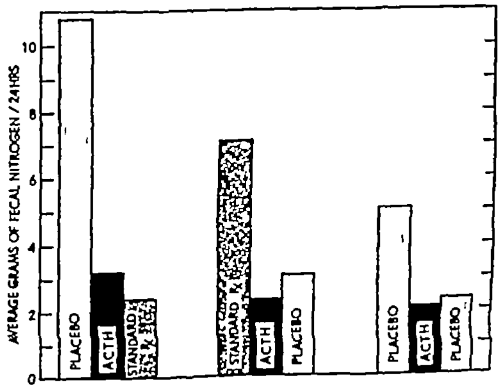

Chart 4 —Decreased output of fecal nitrogen during corticotropin (ACTH) administration in patients C M M H M and L T

The degree of nitrogen loss is determined by several factors, including the responsiveness of the individual to adrenocortical stimulation and his metabolic state at the time of stimulation Urinary nitrogen was measured in 11 patients The daily outputs during corticotropin ranged from 20 to 30 gm , representing two to eight-fold *increases above control levels The excretion* of nitrogen

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8 Kirsner J B Palmer W L and Klotz, A P Reversibility in Ulcerative Colitis Clinical and Roentgenologic Observations Radiology 57 1 1951

9 The analyses described in our paper were performed in the laboratory of Dr Albert Dorfman Department of Pediatrics University of Chicago Dorfman A and Moses F E Effect of Adrenocorticotrophic Hormone (ACTH) on Serum Hyaluronidase Inhibitor in Rheumatic Fever Proc Soc Exper Biol & Med 73 667 1950 Schmith K. and Faber V Fall in Hyaluronidase Inhibition in Serum During Administration of Adrenocorticotrophic Hormone (ACTH) Acta endocrinol 3 310 1949

10 Moeller H C Rider A J , and Kirsner J B Erythrocyte and Serum Cholinesterase in Ulcerative Colitis Gastroent to be published

11 Kirsner J B Sheffner A L. and Palmer W L Studies on Amino Acid Excretion in Man Chronic Ulcerative Colitis and Regional Enteritis J Clin Invest 29 874 1950

12 *Meyer K. and others* Lysozyme Activity in Chronic Ulcerative Colitis Rev Gastroenterol 16 476 1949

was in direct proportion to the quantity of protein ingested (Chart 5) Two patients who consumed in excess of 8,000 calories daily, including 54 and 63 gm of nitrogen, excreted the enormous quantities of 42 and 50 gm of nitrogen per 24 hours The nitrogen loss receded rapidly after the withdrawal of corticotropin, original levels usually were regained within several weeks The nitrogen balance in 10 patients, as reflected by measurements of urinary and fecal nitrogen, was negative during corticotropin and positive after therapy was discontinued

Uropepsin—This proteolytic enzyme normally present in human urine probably is derived from the secretion of pepsinogen into the blood stream by the secreting peptic cells of the stomach[13] Spiro and others[14] have demonstrated during the administration of corticotropin and cortisone a pronounced increase in the urinary content of this enzyme The increase presumably reflects the physiological integrity of the gastric glands in response to adrenocortical stimulation or other stress[15] The daily output of uropepsin in the urine was measured in 10 patients of the present series, utilizing a modification of the method described by Mirsky and others[16] The outputs increased two to four-fold during corticotropin and often paralleled the urinary nitrogen (Chart 5) Similar but less pronounced changes were observed in five patients treated with cortisone and in a normal man studied for control purposes

OTHER EFFECTS

Clinical—Edema of varying magnitude developed in 38 patients The use of a low sodium diet decreased the fluid retention but did not prevent it when large quantities of corticotropin were administered The blood pressure rose temporarily in 21 cases Brust and others[17] have concluded that the blood pressure response to corticotropin and cortisone is independent of sodium retention and that the vascular effects of these hormones are mediated by an humoral mechanism Other changes included "mooning" of the face in 22, acne in 23, striae in five, brownish pigmentation of the skin in six (very prominent in one), hypertrichosis in 12, and buffalo-type obesity in five patients One patient spontaneously described the softening of several operative scars A peculiar and unexplained hyperemia of the fingernails developed in five patients and subsided gradually after the withdrawal of corticotropin Eleven patients described a sense of warmth and excessive perspiration, especially during the night, 12 patients complained of increased flatulence and abdominal distention

Creditor and others[18] have reported an inhibition of wound healing during corticotropin therapy A tendency to suppurative complications has been noted by others In the present series, furunculosis of the arm in one patient responded less promptly to penicillin during the administration of corticotropin then after the hormone was discontinued An infected toe in another man healed more slowly than usual An extensive abscess developed in the buttocks of a third, the lesion healed promptly after drainage chemotherapy and the withdrawal of corticotropin Peritonitis secondary to perforation of the cecum was the cause of death in one patient, a tender mass had been palpated in the right lower abdominal quadrant on admission to the hospital and the perforation was thought to have occurred before corticotropin therapy, the rapid progression of the disease was completely unaffected by extensive antibiotic and supportive treatment Pneumonia developed in one patient and rheumatic fever recurred in another after the completion of therapy, both conditions responded to standard management Blood cultures in seven patients were negative

Laboratory—The serum electrolytes (carbon dioxide, pH, chloride, sodium potassium) were measured at intervals of seven to 10 days The serum CO_2 increased in 33 of 38 patients exceeding 40 mM /L in five (normal—20 to 30 mM /L) Hypochloremia developed in 12 patients The serum potassium diminished in seven patients, in two after profuse diuresis induced by mercurial diuretics The hypokalemia was severe in four patients and was accompanied with characteristic electrocardiographic changes, two of this group required potassium chloride intravenously Since potassium chloride by mouth intensified the diarrhea in several patients, this

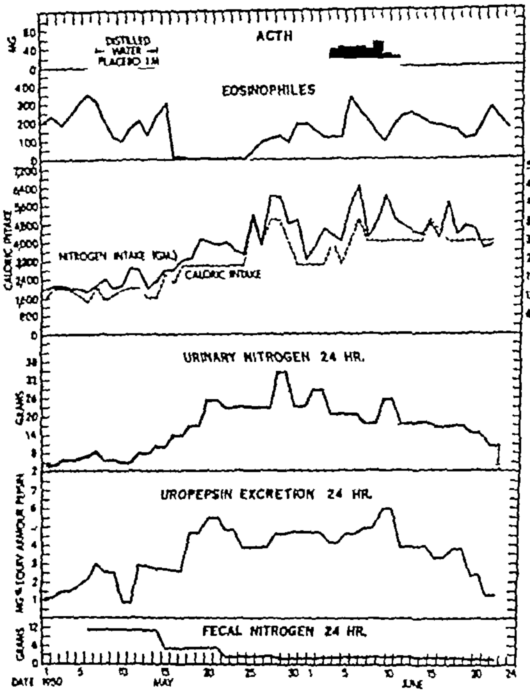

Chart 5—Caloric and nitrogen intake urinary nitrogen and uropepsin and fecal nitrogen during corticotropin (ACTH) administration in patient C M M

medication was not prescribed routinely The disturbances in serum electrolytes subsided gradually when the corticotropin was decreased in dosage or discontinued Greenman and others[19] have suggested the use of a low sodium milk regimen to prevent edema and lessen the changes in electrolytes during corticotropin and cortisone therapy

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[13] Broh Kahn R. H, Podore C J and Mirsky I A Uropepsin Excretion by Man Uropepsin Excretion by Healthy Men J Clin Invest 27 825 1948 Podore C J Broh Kahn R H and Mirsky I A Uropepsin Excretion by Man Uropepsin Excretion by Patients with Peptic Ulcer and other Lesions of the Stomach *ibid* 27 834 1948

[14] Spiro H M Reifenstein R W and Gray S J Effect of Adrenocorticotropic Hormone Upon Uropepsin Excretion J Lab & Clin Med 35 899 1950

[15] Mirsky I A Kaplan S and Broh Kahn R H Pepsinogen Excretion (Uropepsin) as an Index of the Influence of Various Life Situations on Gastric Secretion A Res Nerv & Ment Dis Proc (1949) 29 628 1950

[16] Mirsky I A Block S Osher S and Broh Kahn R H Uropepsin Excretion by Man Source *Properties* and Assay of Uropepsin J Clin Invest 27 818 1948

[17] Brust A A Ransohoff W and Reiser M F Blood Pressure Responses to ACTH and Cortisone in Normotensive and Hypertensive Subjects in Resting State and During Autonomic Blockade with Tetraethylammonium chloride read before the Annual Meeting of the American Society for Clinical Investigation April 30 1951

[18] Creditor M C. Bevans M, Mundy W L. and Ragan, C Effect of ACTH on Wound Healing in Humans, Proc Soc Exper Biol & Med 74 245 1950

TABLE 2—*Relapses After Corticotropin (ACTH) Administration*

Pre ACTH Severity		Severity of Relapse		Time Interval	
Severity of the Disease	No of Patients	Milder	Same	Prompt	3 to 6 Mo
Mild	1	1			1
Moderate	7	4	3	4	3
Severe	12	9	3	4	8
Totals	20	14	6	8	12

Transitory hyperglycemia developed in six patients, glycosuria occurred in only two The white blood cell count rose temporarily in 23 patients, approximating 18,000 to 20,000 in seven The erythrocyte count and hemoglobin value frequently decreased The concentration of the total plasma proteins often diminished during corticotropin therapy, the albumin-globulin ratio was normal initially and did not change

WITHDRAWAL SYNDROME

"Withdrawal" symptoms developed within one to three days after corticotropin therapy in 20 patients The syndrome consisted of fever, chilly sensations, malaise, muscular cramps, and decreased appetite, it was mild in seven, moderate in six, and severe in seven patients The serum calcium and phosphorus were normal in several patients Symptoms subsided within several days Although no direct evidence was adduced concerning this point, the syndrome probably is attributable to relative adrenocortical insufficiency and excessive losses of sodium, chloride, and water following withdrawal of corticotropin other chemical aberrations may be involved

FOLLOW-UP OBSERVATIONS

Two patients died, one by a most unexpected and unexplainable suicide while improving, a similar occurrence has been reported after the use of cortisone[20] The other patient (who received a total of 1,675 mg corticotropin in 17 days) succumbed to perforation of the colon and generalized peritonitis, necropsy revealed malnutrition, severe active colitis, perforation of the cecum, and peritonitis, the adrenal glands were enlarged to three times normal size and the cortices contained many hemorrhages

The period of observation in 38 patients after corticotropin therapy has extended up to four months in 13 patients, eight months in 16, and for 12 months or more in nine Treatment has consisted of moderate activity, a bland diet, and sedatives, sulfaguanidine has been prescribed frequently The disease has remained quiescent in 15 patients Symptoms have recurred in 20 patients (Table 2) Relapses were milder than previously in 14 patients, and of their original severity in six The three remaining patients had not responded to corticotropin Sulfaguanidine, 8 0 gm daily, has seemed surprisingly beneficial in 14 of 17 patients so treated for recurrent symptoms The course of the disease after the cessation of corticotropin therapy in the 38 patients, notwithstanding relapses, has been rated as less severe in 27 and unchanged in 11, the majority have resumed a useful life (Table 3)

REPEATED COURSES OF ACTH

Nine patients received more than one course of corticotropin, distributed as follows two courses in six, three courses in two, and eight courses in one In two patients the response remained slight Favorable results were noted in seven, but were temporary in five of this group Increasing beneficial effects were observed in two patients In several cases the eosinopenia became less pronounced with repeated courses in treatment The patient given corticotropin on eight occasions earlier had improved dramatically and was able to leave the hospital after prolonged hospitalization, symptoms subsequently increased but the clinical response to the eighth course of corticotropin was slight despite a definite eosinopenia These observations suggest the development of a refractory clinical state to corticotropin in some patients Gordon[21] and Elkington and others[22] have commented upon this possibility Holbrook[23] has obtained a good clinical response to corticotropin derived from pigs after lack of response to beef corticotropin in patients with rheumatoid arthritis As noted earlier in this report, the intravenous administration of corticotropin may be effective in patients not reacting to intramuscular injections

TABLE 3—*Clinical Course After Corticotropin (ACTH) Administration*

Severity of the Disease	No of Patients	Duration of Follow up			Subsequent Course	
		4 Mo	8 Mo	12 Mo	Improved	Unchanged
Mild	6	3	2	1	6	1
Moderate	12	4	4	4	8	4
Severe *	20	6	10	4	14	6
Totals	38	13	16	9	27	11

* Two deaths

LONG-ACTING CORTICOTROPIN

Long-acting corticotropin (Armour) was administered in single daily doses to eight patients with recurrent symptoms, the total dose varied from 260 to 2,475 mg The eosinopenia was more variable and transitory and the clinical response was less pronounced than with four daily injections of regular corticotropin The clinical results appeared moderately good in two, slight in three, and nil in three patients Newer long-acting preparations of corticotropin and larger doses may prove more effective

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[19] Greenman L Danowski T S Tarail R Peters J H Wiegand F and Mateer F Studies of Prevention of Some of the Toxic Effects of Prolonged Cortisone and ACTH Therapy read before the 43rd Annual Meeting of the American Society for Clinical Investigation April 30 1951

[20] Borman M C and Schmallenberg H C Suicide Following Cortisone Treatment J A M A 146 337 (May 26) 1951

[21] Gordon G L Development of Refractory State to Adrenocorticotrophic Hormone Endocrinology 45 571 1949

[22] Elkinton J R and others Effects of Pituitary Adrenocorticotropic Hormone (ACTH) Therapy J A M A 141: 1273 (Dec 31) 1949

[23] Holbrook W P Hill D F Stephens, C A L Jr and Johnson R B Long Term ACTH Administration in Rheumatoid Arthritis Proceedings of the Second Clinical ACTH Conference Chicago Dec 8 9 1950 vol 2 p 599

CORTISONE

The effect of cortisone in chronic ulcerative colitis was investigated in five patients The total dosages ranged from 1,900 mg in 10 days to 4,525 mg in 20 days The clinical response was pronounced in one, slight in two, and nil in three instances (one patient received two courses) Symptoms recurred promptly in those patients initially manifesting improvement The eosinophile counts diminished in three cases The proctoscopic changes were slight, the roentgen appearance of the colon was unaltered after treatment in the three patients examined The trends in serum electrolytes, urinary nitrogen, and uropepsin and fecal nitrogen were similar to but less pronounced than with corticotropin therapy The administration of 2,125 mg cortisone in 16 days to a mild diabetic resulted in a pronounced hyperglycemia, persisting for several months There were no other untoward effects One patient with moderately severe colitis improved rapidly during the oral ingestion of 3,000 mg of cortisone in eight days, the eosinophile count decreased slightly, and the urinary nitrogen and uropepsin rose The substitution of a cholesterol solution placebo flavored to resemble the taste of cortisone resulted in the prompt recurrence of symptoms The readministration of cortisone, 1,350 mg by mouth, followed by 1,500 mg intramuscularly, was ineffective Corticotropin, given during the night to conceal the identity of the medication, induced a dramatic disappearance of symptoms (Chart 6) This remission was maintained until the development of a severe upper respiratory infection and recurrent emotional stress Three patients at separate times received both corticotropin and cortisone, corticotropin was vastly superior in inducing remissions Perhaps larger quantities of cortisone will prove more effective

COMMENT

The spontaneous remissions and exacerbations characterizing the natural history of ulcerative colitis necessitate the most careful scrutiny of any new therapy for this puzzling illness Prolonged study of more patients will be required to evaluate conclusively the effects of corticotropin The present observations, nevertheless, suggest that adequate quantities of potent corticotropin preparations may induce striking remissions Many patients had been chronically and seriously ill, in some surgical intervention had been recommended elsewhere The lack of response to conventional therapy in the hospital, the complete ineffectiveness of placebos, and the significant relief of symptoms accompanying the administration of corticotropin would seem to exclude psychotherapeutic effects The improvement was no more complete than had been observed previously in the absence of corticotropin, but it was more rapid and striking The optimum dosage of hormone varied, depending on the severity of the colitis, unexplained individual differences in response to corticotropin, and fluctuations in potency of the drug The administration of moderately large amounts for perhaps six to eight weeks or longer appeared to be more effective than brief courses of treatment The eosinophile counts decreased appreciably in all but one patient, indicating adequate adrenocortical stimulation Impairment of the reserve function of the adrenal cortex has been observed occasionally in chronic ulcerative colitis, probably as a consequence of the long-continued stress [24] The eosinophile count was a useful guide initially in establishing a presumably effective dosage of corticotropin, but the degree of eosinopenia apparently did not determine the clinical result

Subjective manifestations of improvement included subsidence of abdominal discomfort and bloody diarrhea, increased appetite, and a striking sense of well-being, the clinical transformation in some cases was remarkable The emotional response seemed to accompany the improvement in physical condition, rather than precede it, as in the case of McKell and others [25] treated with cortisone, however the two factors undoubtedly influenced each other Objective evidences of remissions such as fewer stools and improved consistency of bowel movements are not specific for ulcerative colitis It has been suggested that corticotropin may suppress colonic hypermotility by inhibiting the formation of acetylcholine [10], studies of the motility of the small and large intestine during corticotropin therapy might be of interest in this connection The proctoscopic manifestations did not correlate chronologically with the clinical response, but subsided usually within three or four weeks The prompt disappearance of mucosal edema and of bloody fluid from the rectum was striking These changes may be related to Ebert's [26] observations that cortisone maintains arteriolar tonus and the integrity of vascular endothelium during experimentally induced infection in the rabbit

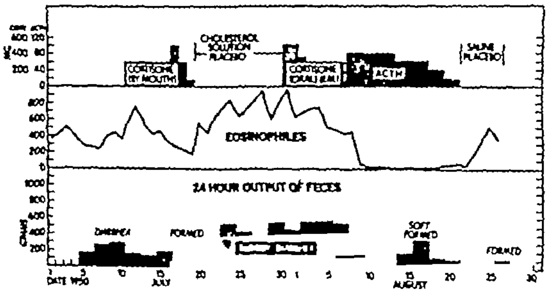

Chart 6—Variable effects of cortisone Prompt clinical improvement with corticotropin (ACTH) administration in patient W K a man aged 33 who had ulcerative colitis for seven years

The laboratory evidences of improvement—decline in sedimentation rate and in the serum concentrations of nonspecific hyaluronidase inhibitor—are observed also in the remissions of rheumatic fever and other diseases The reduction in erythrocyte cholinesterase from high to normal levels similarly may be a nonspecific indicator of clinical remission The decreases in fecal nitrogen and lysozyme likewise accompany the healing of ulcerative colitis during therapy other than corticotropin, hence, they do not constitute specific hormonal effects The fecal outputs of lysozyme reflect the activity of the colitis and thus may be utilized as a measure of clinical response The rapid production of lysozyme by the experimentally injured bowel suggests that it is an early accompaniment of tissue inflammation and necrosis [27]

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[24] Posey E L Jr Mathieson D R Mason H L and Bargen J A The Epinephrine Test for Cortico-Adrenal Reserve Formation and the Excretions of Corticosteroids and 17 Ketosteroids in Chronic Ulcerative Colitis Am J M Sc 219 651 1950

[25] McKell T E Tuthill J W and Sullivan A J Affective Response of a Patient with Chronic Ulcerative Colitis to Cortisone Gastroenterology 17:20 1951

[26] Ebert, R H In Vivo Observations of the Effects of Cortisone on the Vascular Reaction to Large Doses of Horse Serum Using the Rabbit Ear Chamber Technique to be published

Corticotropin, though of value in inducing remissions, does not cure ulcerative colitis Symptoms returned either promptly or within several months after the discontinuance of therapy in 20 patients With the further passage of time symptoms may recur in all cases initially manifesting improvement The relapses generally were milder than usual and the subsequent course of the disease in many patients, despite recurrences, has seemed less severe than before corticotropin administration Repeated treatment with corticotropin has induced sustained remissions to date in two patients and was helpful temporarily in five Currently available longer-acting corticotropin produced no striking effects On the other hand, the prolonged administration of one or two daily doses of regular corticotropin was beneficial in one patient

The alterations in protein metabolism and the undesirable clinical and chemical reactions encountered during corticotropin therapy in patients with ulcerative colitis are identical with those observed in normal control subjects and in patients with a wide variety of diseases [28] Except for severe hypopotassemia, these side effects did not present serious problems and they subsided without further treatment after the withdrawal of corticotropin On the other hand, the tendency in several patients to delayed healing of suppurative lesions and the occurrence of pneumonia and recurrent rheumatic fever represent potentially serious complications, in a nutritionally depleting disease such as ulcerative colitis the problem assumes added importance The administration of sulfonamides and antibiotics concomitantly with corticotropin may diminish the tendency to suppurative complications Diminution of the excessive loss of nitrogen, perhaps by the use of high potassium diets, [29] also would appear to be highly desirable

The nature of the remissions accompanying corticotropin therapy and the implications contained therein are not obvious at present, specific and nonspecific mechanisms may be involved The recurrences after the discontinuation of corticotropin indicate that the basic cause or causes have not been eliminated There is no evidence that dysfunction of the pituitary or adrenal gland plays an etiologic role in ulcerative colitis The remarkable and varied metabolic, endocrine, chemical, enzymatic, and cytologic effects of corticotropin have not yet been fully elucidated [30] Most of the clinical and laboratory signs of improvement described in this study are observed also during the spontaneous remissions of this disease and other diseases Alterations in enzyme systems, the hypersensitive state, antigen-antibody relationships, tissue permeability, and perhaps in the mechanisms involving hyaluronidase [31] may be postulated but supporting evidence is not yet available The remissions during corticotropin treatment suggest possible identification of ulcerative colitis with the so-called collagen diseases The prompt reversibility of the process would be compatible with the concept of changes in the ground substance of the connective tissue of the rectum and colon, rather than in the formed elements Investigation of this problem now is in progress Preliminary results, indeed, suggest certain similarities between ulcerative colitis and the collagen diseases

The capacity of corticotropin to induce remissions, albeit temporary, and to halt unfavorable progression of the disease stimulates further interest in the pathogenesis of ulcerative colitis and renews hope for its ultimate control

SUMMARY

The effects of corticotropin (ACTH) in chronic ulcerative colitis were studied in 40 patients The disease was classified as mild in six, moderate in 12, and severe in 22 The course was not benefitted demonstrably by placebos of saline solution or distilled water, represented to the patients as corticotropin, or by the administration of other adrenal hormones, amphetamine (benzedrine*) sulfate, and ascorbic acid The clinical response during administration of corticotropin was considered good in 27, moderate in seven, slight in two, and nil in four patients Administration of moderately large quantities of corticotropin for six to eight weeks was more effective than brief periods of treatment Improvement was characterized by the disappearance of abdominal distress and bloody diarrhea, prompt decline in fever, pronounced sense of well-being, better appetite, and by the gradual subsidence of proctoscopic evidences of the disease The eosinophile response did not consistently correlate with the clinical result, but the initial counts served as a practical index of corticotropin's effect. The improvement was no more complete than had been observed previously with other treatment, but it was more prompt and occasionally dramatic

Laboratory evidences of remission included pronounced decrease in the excessive fecal outputs, fecal nitrogen, and lysozyme The sedimentation rate, erythrocyte cholinesterase, and the serum nonspecific hyaluronidase inhibitor tended to diminish from high to normal levels The urinary excretion of nitrogen and uropepsin increased temporarily

The features of Cushing's syndrome, edema, hypertension, characteristic alterations in serum electrolytes, insomnia, flatulence, "withdrawal" symptoms, and other side effects occurred in this series of patients with ulcerative colitis as in other diseases

Among the four patients not benefited by corticotropin, one died of perforation of the colon and peritonitis, probably antedating therapy One patient, after having responded well to corticotropin one year earlier, during a second course of treatment acquired severe angioneurotic edema and urticaria, pronounced dermal sensitivity to pork corticotropin was demonstrated One patient later responded to sulfaguanidine, and the fourth underwent a partial collectomy Among the 36 patients manifesting some degree of improvement during corticotropin therapy, one unaccountably committed suicide The remissions have been sustained to date in 15 patients Symptoms have recurred in 20 Relapses generally have been milder than usual and have responded to diet, sedation, and sulfaguanidine Repeated treatment with corticotropin was helpful in seven patients, but only temporarily in five of this group, in several the eosinopenia and clinical response were less pronounced than had been observed earlier Currently available long-acting corticotropin did not produce striking results In general, the course of the disease, notwithstanding recurrences, has seemed less severe in 27 patients In five patients with chronic ulcerative colitis cortisone appeared to be considerably less effective than corticotropin

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[27] Moeller H C Marshall H C and Kirsner J B Lysozyme Production in Response to Injury of Gastrointestinal Tract in Dogs Proc Soc Exper Biol & Med 76 159 1951

[28] Proceedings of the First Clinical Conference Chicago Philadelphia The Blakiston Company 1950

[29] Whitney J E and Bennett L L Inhibition of Catabolic Effect of ACTH on Nitrogen Metabolism by a High Potassium Diet Federation *Proc* 9 134 1950

[30] Sprague, R G Cortisone and ACTH A Review of Certain Physiologic Effects and Their Clinical Implications, Am J Med **10** 567 1951

[31] Smith G H and Opsahl J C The Adrenal Hyaluronidase Relationship in Infection, Yale J Biol & Med 23:361 1951

CONCLUSIONS

1 Corticotropin (ACTH) does not cure ulcerative colitis but frequently induces striking remission of the disease

2 Similar clinical improvement may occur without corticotropin but usually is less rapid

3 Relapses are frequent, but thus far they seem less severe

4 The mechanism of the induced remissions is not yet known

950 E 59th St

DEGENERATIVE JOINT DISEASE OF THE HIP

RELIEF OF SYMPTOMS FOLLOWING CORTISONE THERAPY

Ralph H Boots, M D , L C Yen, M D , K J McMorrow, M D
and
Charles Ragan, M D , New York

Degenerative joint disease is a manifestation of aging, the result of the wear and tear of living on articular structures Pathologically there is a change in the articular cartilage leading to fibrillation of the cartilage followed by eburnation of bone and overproduction of bone exostoses When the damaged joint is in an abnormal position, acute symptoms may result from acute or sustained trauma following normal structural stress and strain, and during the acute phase an inflammation of the synovia is usually seen In all instances, there is a certain element of overproduction of connective tissue manifested by granulation tissue in the form of pannus Since we have felt that hyperadrenalism induced by corticotropin (ACTH) or cortisone may interfere with inflammatory reactions in the connective tissue and delay the turnover of granulations,[1] it was decided to evaluate the effect of cortisone on degenerative joint disease Many forms of this disease are available for study, but, in most instances, the course of these articular lesions is variable and is influenced by many nonspecific factors However, in one instance of degenerative joint disease—malum coxae senilis (degenerative joint disease of the hip)—the course is progressive and symptoms are usually sustained and are not modified by simple palliative measures For these reasons we have treated a group of patients suffering from malum coxae senilis with cortisone acetate obtaining what we consider to be favorable results comparable in degree to that reported in rheumatoid arthritis [3] In a group of patients past middle age, the dangers of administering cortisone such as thromboembolic phenomena and salt and water retention with congestive failure, were fully realized On the other hand, all of these patients were miserable with hip pain and considering surgery for relief The risk of cortisone did not seem any greater than that of surgery

Eleven patients, five men and six women, were treated Their ages varied from 54 to 82 years In four patients the right hip only was involved, in three patients the left only, and in four patients there was an involvement of both hips The treatment schedule followed was 100 mg of cortisone every eight hours for the first 24 hours, and, following this, 100 mg daily for a period of five to 17 days In most of the patients, very little subjective improvement was noticed during the first four days of administration of the drug Marked subjective improvement occurred by the seventh day in 10 of the 11 patients They were then discharged from the hospital and continued with doses varying from 50 to 100 mg , three times a week The patients were not confined to bed, and they were encouraged to go through as much of their daily activities as compatible with confinement in a hospital and were given supervised resistive exercises to the affected joints daily The dosage and clinical improvement are shown in the Table In seven patients the range of motion of the involved joints was measured by one of us before the beginning of their treatment, and again before they left the hospital In these seven there was an increase in range of motion of the affected joints In

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Aided in part by a grant from the Masonic Foundation for Medical Research and Human Welfare

From the Department of Medicine Columbia University College of Physicians and Surgeons and the Edward Daniels Faulkner Arthritis Clinic of the Presbyterian Hospital New York

[1] Ragan C Grokoest A W and Boots R H The Effect of Adrenocorticotrophic Hormone (ACTH) on Rheumatoid Arthritis Am J Med 7 741 1949 Ragan C Howes E. L. Plotz, C M Meyer K Blunt J W., and Lattes R The Effect of ACTH and Cortisone on Connective Tissue Bull New York Acad Med 26:251, 1950.

[2] Supplied through the courtesy of Merck & Company Inc Rahway N J for this specific project

[3] Hench P S Kendall E. C. Slocumb C H and Polley H F Effect of a Hormone of the Adrenal Cortex (17-hydroxy 11-dehydrocorticosterone Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis. Preliminary Report Proc Staff Meet. Mayo Clin 24 181 1949

most instances increase in range of motion took place only after pain on activity was reduced

This group of elderly people tolerated cortisone in the amounts given as well as the average patient Insomnia was a disagreeable feature in three of the 11 In two of them it occurred during the first few days of treatment only In the third the insomnia was so marked that the hormone was discontinued after two weeks In two patients a transient glycosuria developed, and one patient seemed somewhat hyperactive during the initial phase of hormone treatment and a peculiar twitching of the mouth developed These deviations from the normal disappeared while on the lowered maintenance dosage The one patient who did not have an excellent result was a man aged 56 who had involvement of both hips probably secondary to osteitis pubis subsequent to prostatectomy Although an increase in the range of motion of the hips was noted, there was no change in the pain or stiffness, and we considered that he had gained insufficient improvement to warrant a continuing dosage

Dosage and Clinical Improvements of Patients

Patient	Age and Sex	Hip Joint Involved	Duration of Symptoms	Initial Course of Cortisone	Untoward Symptoms	Subjective Improvement (Pain and Stiffness) Following Initial Treatment	Continuing Dosage Used Mg	Remarks
E S	61-F	Left	3 yr	850 mg 7 days	None	Marked	75 (3 times a week)	Subjective relief marked
E G	72-F	Left	14 mo	1 000 mg 12 days	None	Marked	100 (2 times a week)	
J G	75-M	Right	5 mo	800 mg 8 days	Insomnia	Marked	50 (daily) 100 (2 times a week)	(Discontinued because of insomnia)
M M	70-F	Right	10 yr	1 200 mg 9 days	Moderate insomnia—4 nights	Marked	100 (3 times a week) (oral)	
J O	56-M	Both	3 yr	1 100 mg 8 days	None	No change	Insufficient improvement to warrant continuing dosage	
K S	82-F	Right	20 yr	1 100 mg 9 days	Hyperactive—2 weeks	Marked	50 (3 times a week)	
C H	55-M	Both	8 yr	1 100 mg 8 days	Glycosuria—2 days	Marked	500 (weekly)	Cortisone stopped after 8 days two weeks later slipped back 50% and cortisone again given with relief
E H	69-F	Right	10 yr	875 mg 8 days	Glycosuria—2 days	Marked	75 (3 time a week)	Cortisone stopped because of intermittent enteritis
J I	68-M	Both	10 yr	1 000 mg 10 days	Mild insomnia	Marked		No maintenance relapsed after 3 wk
A B	54-F	Both	8 yr	1 000 mg 8 days	Insomnia	Marked	100 (3 times a week)	Kept only in fair remission
R L	73-M	Right	5 yr	700 mg [illegible] days	None	Marked	375 (weekly)	Maintained 50% improvement, increase in abduction maintained

We have been able to follow eight of the 11 patients for nine months Two were lost to follow-up and one received no benefit Five of the eight patients continue to receive cortisone, the dosage varying from 50 to 75 mg daily by mouth The hormone was discontinued in two patients because of the appearance of congestive failure manifested by peripheral edema The third discontinued the hormone in the second month of therapy during an episode of abdominal pain and diarrhea Partial improvement has been maintained in this patient.

COMMENT

As in all instances of degenerative joint disease, when the joint has been injured or exposed to excessive trauma, the changes associated with wear and tear appear at an earlier age One of the patients (C H) is believed to have had Legg-Perthes disease (osteochondrosis of capital epiphysis) of both hips as a child, since he was placed on bed rest with the later use of braces in his first decade of life, but details of this illness are not available

The pathway by which the pain and limitation of motion in degenerative joint disease are beneficially modified by the induction of minimal hyperadrenalism is not clear We have supposed that the amelioration of symptoms following this procedure in rheumatoid arthritis might be related to a decreased reactivity of the connective tissue [1] This hypothesis has been based on studies done in animals and man, whereby the repair of traumatized (surgical wound) connective tissue progressed more slowly when hyperadrenalism was induced The decrease in rate of repair could be correlated with the amount of hyperadrenalism induced With marked hyperadrenalism, repair processes for a time were brought to a complete standstill With minimal degrees of hyperadrenalism, repair took place almost normally, and delay, if present at all, required careful rebiopsy techniques in order to be demonstrated Histologically, once fibroblasts have been laid down, healing with deposition of ground substance and growth of blood vessels has progressed at the usual rate We therefore have suggested that the inhibition of connective tissue growth during hyperadrenalism rests at the prefibroblast level Although the actual demonstration of maturation from stem cell (or histiocyte) to fibroblast has not been clearly defined, it is agreed by most that the precursor of the fibroblast is this particular cell called by many names, such as stem cell, histiocyte, macrophage, or clasmatocyte This cell presumably is a member of the reticuloendothelial system, and it is apparent that one of the major cellular effects of induced hyperadrenalism is a depression of the reactivity of this system Thus, to our original concept that during the hyperadrenal state the reactivity of the connective tissue was depressed, a corollary may be added that this depression is related to or caused by a depression of the reticuloendothelial system, one component of which acts as the precursor of the connective tissue system in repair as well as in its dynamic turnover

With this concept in mind, some insight into the mechanism involved in the amelioration of the symptoms of degenerative joint disease by cortisone administration may be proposed In degenerative joint disease, there is an element of proliferating connective tissue manifested by the presence of granulations From the above discussion, it is apparent that these granulations will not be modified during the hyperadrenal state save over a long period, since the life span of the mature connective tissue cell apparently is quite prolonged The patients described noted improvement promptly, which would imply that the effect is at the macrophage level

There has been much speculation concerning the "anesthetic effects" of cortisone and corticotropin This has not been substantiated by controlled experiments on pain induced by several different stimuli[4] There is a possibility that the observed effect in these patients was related to the euphoria, or increase in sense of well-being, but by and large this group of patients showed no obvious trend in this direction

The widespread effects of cortisone and corticotropin described in recent years involving many systems such as the central nervous system,[5] antibody production,[6] antipyresis,[7] poor localization of inflammation,[8] make it seem unlikely that this effect on degenerative joint disease is purely one of anesthesia or of one comparable to topectomy, whereby pain is noted but is of no concern to the patient

SUMMARY AND CONCLUSIONS

Eleven patients with degenerative joint disease of the hip were treated with cortisone, with marked subjective improvement resulting in 10 patients An increase in range of motion of the hip, to a greater or lesser degree, occurred in all patients in which this was carefully evaluated

Very few untoward symptoms were seen initially in this group of patients despite the fact that they were of the older age group In general, the dosage required to obtain improvement is comparable to the amount needed for a patient with mild rheumatoid arthritis

However, prolonged continuous hormonal administration was not practical in all cases Cortisone was discontinued in five of 10 patients noting beneficial effects for various reasons Thus, after nine months, only five of the original 11 patients continue to receive the hormone

We fully realize the small number of cases studied, but submit this as a preliminary report

620 W 168th St

4 Grokoest A W Vaillancourt de G and Ragan C J Clin Invest 30 644 1951

5 Hoefer P F A and Glaser G H Effects of Pituitary Adrenocorticotropic Hormone (ACTH) Therapy Electroencephalographic and Neuropsychiatric Changes in 15 Patients J A M A 143 620 (June 17) 1950

6 Bjørneboe M Fischel E E and Stoerk H C The Effect of Cortisone and Adrenocorticotrophic Hormone on the Concentration of Circulating Antibody J Exper Med 93 37 1951

7 Recant, L Ott, W H, and Fischel E E The Antipyretic Effect of Cortisone Proc Soc Exper Biol & Med 75:264 1950

8 Harvey A M, Howard J E and Kattus A A The Effect of Adrenocorticotropic Hormone (ACTH) and Cortisone on Certain Diseases of the Eye in Which Hypersensitivity Plays a Role Bull Johns Hopkins Hosp 87 461 1950 Spain D M Molomut N and Haber A Biological Studies on Cortisone in Mice Science 112 335 1950

CORTISONE IN THE TREATMENT OF OSTEOARTHRITIS OF THE HIPS

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Although the literature on cortisone in the therapy of various diseases has become voluminous little has been said concerning its use in degenerative joint disease (osteoarthritis) This is particularly true with regard to degenerative joint disease of the hips, so-called malum coxae senilis There have been several encouraging reports on the efficacy of corticotrophin (ACTH) or cortisone in other forms of degenerative joint disease

Hench and others[1] reported a patient with degenerative joint disease of the left knee, who received cortisone for the treatment of leukemia cutis The pain and stiffness in the knee was ameliorated and remained improved when the patient last was seen a month later Thorn and others described marked alleviation of symptoms in a patient who had generalized degenerative joint disease with involvement of both hips Therapy in this case consisted of 40 mg of corticotrophin daily in divided dose for seven days Dale[3] described dramatic improvement in two cases with this drug but, from the data supplied, it is not absolutely clear that the latter were cases of pure degenerative joint disease

In a recent talk, Boots described beneficial effects in 10 of 11 patients with osteoarthritis of the hips on cortisone therapy Our previous experience with three similarly afflicted patients receiving cortisone was not in accord with the above We decided, therefore, to investigate a larger series The results are the basis of this paper in which eight patients with osteoarthritis of the hips who were treated with cortisone acetate are discussed The doses of cortisone used for all patients were deemed sufficient to have controlled even a severe rheumatoid process

The eight patients selected were chosen on the basis of their reliability as witnesses Although each was aware that she was receiving cortisone the drug was adminis-

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This inv[illegible] was sup[illegible] by [illegible] Institutes of H[illegible] United States Public [illegible] tered in a noncommittal manner Leading questions were avoided as much as possible in evaluating the subjective response

In Table 1 are summarized some of the salient facts about each of the eight patients It will be noted that seven are female and one male Cases 1, 2, 4, and 8 will be discussed in more detail

Fig 1 —X ray showing marked narrowing of the joint space in both hips and sclerosis of the femoral heads and acetabula

REPORT OF CASES

Case 1 —B B was a 58-yr-old white woman whose chief complaint was severe pain in both hips when walking This had been increasing for eight years and had progressed to such an extent that ambulation even with two canes was painful and slow Pain and stiffness of lesser degree were present in the knees and lower spine Acetylsalicylic acid (aspirin) in doses of 40 to 60 grains (2 6 gm) daily was required for temporary relief

This florid, obese woman weighed 174 lb (78 9 kg) There was marked increase in lumbar lordosis Abduction and external rotation of the hips were moderately restricted by muscle spasm X-ray studies showed marked narrowing of the joint space in both hips, with sclerosis of the femoral heads and acetabula (Fig 1) There were also advanced hypertrophic changes in the lumbar part of the spine and marked narrowing of several intervertebral spaces The blood cell count, Kline and Kolmer tests, urinalysis, and albumin globulin ratio were normal The sedimentation rate was 36 mm in one hour (Wintrobe) The reason for the elevation of the sedimentation rate was not apparent

A lumbrosacral support was fitted with considerable relief from back pain and the canes were replaced by crutches for walking Concomitantly 1 5 gm of cortisone acetate was given by injection during a 15 day period, along with daily treatment in a Hubbard hydrotherapy tank The initial dose was 300 mg which was then reduced to 200 and 100 mg, and finally to 75 mg, per day There were no detectable side effects and indeed the patient lost 8 lb (3 6 kg) in weight on a 1,200-calorie low salt diet

There was no subjective or objective evidence of improvement as determined by the amount of pain on walking and the range of motion in the hips The pain in the knees was lessened, but certainly not more than was anticipated for any hospitalized patient The lumbrosacral pain had abated even before cortisone therapy was instituted The sedimentation rate remained unchanged at 36 mm in one hour (Wintrobe)

Case 2 —M H was a 71 yr old white woman who had experienced increasing pain in her hips for the past seven years This pain had become so severe that she had been obliged to use first canes, then crutches, in order to walk

The patient weighed 144 lb (65 3 kg) The hips were moderately limited in all movements by pain and spasm There were several symptomatic Heberden s nodes on the terminal interphalangeal joints on both hands, and the knees showed some lateral instability X rays of the hips (Fig 2) disclosed marked degenerative changes with joint narrowing and bone sclerosis The entire spine and both knees showed advanced hypertrophic changes, and there was degeneration of many intervertebral disks The blood count, Kline and Kolmer tests, urinalysis and albumin globulin ratios were within normal limits, and the sedimentation rate was 26 mm in one hour (Wintrobe)

Table 1 —*Salient Facts About Patients*

	Sex	Age	Duration of Symptoms Yr	Aids in Walking	Involvement Demonstrated by X Rays
1 B B	F	68	8	2 canes	Marked
2. M H	F	71	7	Crutches	Moderately severe
3 E L	F	60	10	0	Moderate
4 E S	F	20	3	0	Moderate
5 E B	F	08	4	0	Moderate
6 J W	F	65	15	Cane	Marked
7 G L	M	47	½	0	Moderate
8 G H	F	78	3	0	Moderate

Hinged knee braces were prescribed for the knees, and Hubbard tank therapy was given daily for nine days Cortisone acetate was given by injection for 10 days in the doses described previously in Case 1 Side effects again were absent, and the sedimentation rate fell to 9 mm in one hour during this period However, there was no subjective or objective evidence of improvement in the hips Pain and spasm persisted, and the range of motion was not appreciably altered

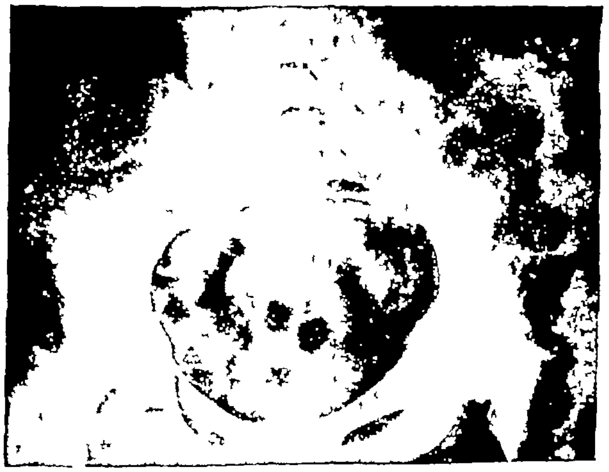

Fig 2 —X ray showing degenerative changes, narrowing of the joints and bone sclerosis

Case 4 —E S was a 26 yr old woman who had coxa plana since childhood Degenerative changes in the hips ensued gradually and became symptomatic during the past three years Walking was so painful that she was unable to do the shopping or much of the routine housework It was the opinion of the orthopedic surgeons that hip arthroplasties were indicated, but they were willing to allow a trial on cortisone first

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1 Hench P S Kendall E C Slocumb C H and Polley H F Effects of Cortisone Acetate and Pituitary ACTH in Rheumatoid Arthritis Rheumatic Fever and Certain Other Conditions Study in Clinical Physiology Arch Int Med 85 545-666 (April) 1950

2 Thorn G W Forsham P H Frawley T F Hill S R Jr Roche M Staehelin D and Wilson D L Medical Progress The Clinical Usefulness of ACTH and Cortisone New England J Med **242**: 783 793 (May 18) 824-834 (May 25) 865-872 (June 1) 1950

3 Dale M Treatment of Osteoarthritis with ACTH J Michigan M Soc **49**: 1068 1069 (Sept) 1950

4 Boots R H and Ragan C *Degenerative Joint Disease of the Hip* (Malum Coxae Senilis Osteo-Arthritis of the Hip) Relief of Symptoms Following Cortison Therapy read before the Meeting of the New York Rheumatism Association New York City April 11 1951

Cortisone by mouth was started on an outpatient basis in the usual dosage After seven days there was evidence of considerable subjective benefit but no objective change By the second week the patient was able to do all of her housework and to go shopping as before The subjective improvement was marked, and this woman was the only patient who became noticeably euphoric There was also evidence of objective improvement in that the intermalleolar distance on forced abduction had increased from 41 5 to 47 5 cm Placebo tablets were substituted for one week, and the patient experienced a moderate subjective relapse The patient resumed treatment with cortisone and was still deriving considerable benefit after seven weeks

Case 8 —G H was a 78 yr-old woman who had suffered from unilateral hip disease for three years Although she had pain and limped when walking, she did not require a cane or crutches

The blood count and sedimentation rate revealed no abnormality X rays disclosed a normal left hip but a moderately narrowed and sclerotic right hip joint Cortisone was administered orally in an initial daily dose of 150 mg for two days, then 100 mg. daily for 15 days This treatment was also carried out on an outpatient basis

After 10 days the patient stated that she had considerably less pain, although she maintained a limping gait Improvement was more marked, however in the objective appraisal The intermalleolar distance had increased from 23 in (58 4 cm) to 29 in (73 6 cm) flexion had increased by 30% and extension by 20% There was no change in the degree of abduction or rotation There was no doubt that this patient was improved during the trial on cortisone so the treatment was continued Throughout the next seven weeks there seemed to occur a slow relapse, even though the dose of cortisone was maintained at 75 100 mg daily The patient still continued on cortisone at the time of this writing, but was becoming increasingly discouraged, feeling that she was only a little better than before taking the drug The increased abduction noted on cortisone trial has also decreased to almost pretreatment amount.

The results in all cases are summarized in Table 2

In only two of the eight cases was there evidence of any degree of improvement as judged by the patients' subjective evaluation and by objective measurement of hip motion Only in Case 4 did euphoria occur Indeed, several patients requested that the treatment be discontinued In only two instances, Cases 4 and 8, was it mutually desirable to continue with cortisone therapy

COMMENT

Although degenerative joint disease is sometimes regarded as a natural, aging process which is comparatively benign, a study of patients with malum coxae senilis reveals the marked incapacitation that may result The pain it produces accompanies every move and may be only less intense at rest Treatment of this condition has been aided by such means as braces crutches, intra-articular injections, neurectomies and arthroplasties Until the etiology is better understood, little more than palliation can be offered

It seemed, therefore, that a trial of cortisone might be indicated in osteoarthritis of the hip even without a specific rationale, for the mode of action of cortisone in arthritis is still undetermined Physiologically, there was little reason to believe that this hormone would be of value in degenerative joint disease We had noted its ineffectiveness in several cases in which there was degenerative joint disease which was superimposed on a burned out' rheumatoid process Despite this, we were prompted to give cortisone a trial because of several observations It has been shown that there is probably a decreased synovial blood flow in degenerative disease as determined by intra-articular temperature cooling curves[5] It has also been shown that cortisone will increase the peripheral blood flow[6] Therefore, if some of the pain and muscle spasm in this disease is caused by synovial ischemia, it is conceivable that cortisone could be of benefit by improving synovial circulation

Although cortisone had no appreciable beneficial effect in the dosage used on either the degree of pain or the range of motion in six of the eight patients, it is barely possible that larger doses of the drug over a more extended period might have effected improvement in the refractory cases Whereas a trial with corticotrophin might also have succeeded where cortisone had failed, in one additional case of unilateral osteoarthritis of the hip, not included in the above series, a two-week-trial with corticotrophin had produced apparent subjective, but no objective, benefit. Salicylates and amphetamine sulfate were later administered, beginning six weeks after administration of corticotrophin had been discontinued, and it was found that the subjective benefit from this was greater than it had been while the patient was on corticotrophin This finding emphasizes the fact that further study is required, in which controls are used

Table 2 —*Results of Cortisone Treatment in Eight Cases*

		Involvement	Days	Total Dose Gm	Results	
					Subjective	Objective
1	B B	Bilateral	15	1.5	0	0
2	M H	Bilateral	10	1.3	0	0
3	E L	Bilateral	7	1 0	0	0
4	E S	Bilateral	14*	1 7	Improved	Improved
5	E B	Unilateral	18	2 0	0	0
6	J W	Bilateral	15	2 0	Discouraged	0
7	G L	Bilateral	12	1.5	0	0
8.	G H	Unilateral	15*	1.6	Improved	Improved

* Treatment continued

SUMMARY

Eight patients with osteoarthritis of the hips (malum coxae senilis), who were treated with cortisone acetate are discussed There was no evidence of subjective or objective benefit that could be attributed to cortisone in six of the cases The improvement noted in two cases was sufficiently marked to justify continuation of the treatment It is difficult to justify the use of cortisone in the treatment of osteoarthritis with the known limitations and dangers of such treatment in this older age group on the basis of our results

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[5] Hollander J L. and Horvath S M The Influence of Physical Therapy Procedures on the Intra articular Temperature of Normal and Arthritic Subjects Am. J M Sc 218 543 548 (Nov) 1949 unpublished data

[6] Horwitz, O Sayen A Nalde M and Hollander J L. Measurements of Certain Cardiovascular Responses to ACTH and Cortisone in Man Am. J M Sc 221 669 (June) 1951

An Old Complaint.—In 1500 B C the citizens of Thebes were complaining that there were no longer any family physicians Everyone was a specialist Herodotus the Greek historian wrote "The practice of medicine is so divided among them that each physician is a healer of one disease and no more All the country is full of physicians some of the eye some of the teeth some of what pertains to the belly"—*Illinois Health Messenger* July 15 1951

PROLAPSE OF THE GASTRIC MUCOSA INTO THE DUODENUM

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Prolapse of the gastric mucosa into the duodenum, as the name implies, is the protrusion of the redundant gastric mucosa through the pylorus into the duodenum It is not rare in occurrence, and it may be responsible for a number of undiagnosed gastrointestinal symptoms

Since the first reported case of prolapse of the gastric mucosa was surgically proved by Schmieden,[1] in 1911, over 100 cases have been reported as observed on x-ray but not confirmed by surgery

Feldman [2] indicates that redundant gastric mucosa occurs in approximately 1% of all patients with gastrointestinal disease Scott,[3] reviewing 1,346 cases of upper gastrointestinal tract disease, found 14, or 1 04% Rees [4] found 4 cases of the condition in 3,000 patients who had upper gastrointestinal x-ray studies Cove and Curphey [5] reviewed 650 cases and found that prolapse had occurred in 22, or 3 38% It was their impression that the incidence is greater than is usually suspected Eliason, Pendergass, and Wright [6] were the first to describe the roentgenographic signs produced by prolapse of gastric mucosa, in 1926 Melamed [7] collected 25 diagnosed cases in which the patients were relieved of symptoms after medical or surgical care Ferguson,[8] in a review of 297 examinations of the upper part of the gastrointestinal tract made at Grady and Emory University hospital, found 23 cases, an incidence of 7 7% He reports summaries of six cases, only one of which was proved by surgery DiLeo, Kuker, and Shepard,[9] in 1949, summarized the literature of 33 cases proved by surgery and added one of their own

The purpose of this report is to review briefly the literature on this condition, to emphasize its clinical aspects, and to report four cases that came to our attention in the past two years on the surgical services at Charity hospital and Touro infirmary in New Orleans

An analysis of the literature discloses that a total of 41 cases of prolapsed gastric mucosa were proved at operation [10] We have added four more cases, one of which has been previously reported This brings the total to 44 (table 1) Over 100 cases were reported on x-ray, and the number may be even greater by this time However, they were not confirmed by surgery, and therefore, are not included in this report

ETIOLOGY

The etiology of this condition and the mechanism of its occurrence are not definitely known Several theories have been advanced Eliason, Pendergass, and Wright [6] feel that a low-grade inflammation of the antral mucosa causes a hypertrophy of the mucosa and that the added effect of hyperperistalsis pushes the gastric mucosa through the pylorus Rees [4] suggested that a degeneration of the pyloric muscle occurred and that if hyperperistalsis developed this caused the antral mucosa to become loosened and forced through the pylorus Bralow and Melamed [11] theorized that a hypertrophic gastritis developed secondarily to a benign peptic ulcer, on either the gastric or the duodenal side, and in a small number of cases would eventually cause a prolapse of the mucosa through the pylorus Scott's [3] observations led him to believe that a preexisting disease process of the gastric mucosa is not necessary for the production of a prolapse He believes that the development of a prolapsed mucosa is inherent in the walls of the normal stomach and that any condition that may produce hyperperistalsis, whether neurogenic, such as fear, anxiety, or anger, or chemical, caused by stimulants such as coffee, tobacco, alcohol, or condiments, may play a part in the production of this condition Cove and Curphey [5] offer no new theory but conclude that the lesion is a mechanical one based on a hypermotility of the gastric mucosa This hypermotility may be congenital or caused by conditions that produce abnormal gastric motility which, over a period of time, loosens the mucosa from the submucosa to such an extent that a prolapse could occur From observation of four patients in the ward and at operation, we are inclined to agree with the conclusions of Cove and Curphey [5]

PATHOLOGY

On operation [11] the prolapsed portion of the gastric mucosa appears like a loose collar of redundant hypertrophied mucosa The prolapsed fold may have the appearance of normal mucosa, soft, pliable, and not fixed, or it may be thickened, as in chronic gastritis Studies of the normal gastric antrum reveal that the mucosa and the muscularis are connected by soft, yielding submucosa composed of loose, areolar tissue containing blood vessels, lymphatics, and nerves Scott,[3] in studying over 100 autopsy specimens, demonstrated that the mucosa is movable over a distance of 1 to 1½ in (2 5 to 3 8 cm) However, this amount of mobility was not enough to permit a prolapse Melamed demonstrated that the movement of the gastric mucosa on the submucosa varied in individuals, and in some the gastric mucosa could be

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[1] Schmieden V Die Differentialdiagnose zwischen Magengeschwür und Magenkrebs Die pathologische Anatomie dieser Erkrankungen in Beziehung zu ihrer Darstellung im Röntgenbilde Arch f Klin Chir **96**: 253, 1911

[2] Feldman, M Clinical Roentgenology of the Digestive Tract ed 2 Baltimore Williams & Wilkins Company 1945 p 155

[3] Scott, W G Radiographic Diagnosis of Prolapsed Redundant Gastric Mucosa into the Duodenum with Remarks on *the Clinical Significance* and Treatment Radiology **46**: 547 1946

[4] Rees C E Prolapse of the Gastric Mucosa Through the Pylorus Surgical Treatment Surg *Gynec & Obst* **64**: *689 1937*

[5] Cove A M and Curphey W C Prolapse of Redundant Gastric Mucosa Surg Gynec & Obst **88** 108 1949

[6] Eliason E L *Pendergass E P and Wright,* V W M The Roentgen Ray Diagnosis of Pedunculated Growths and Gastric Mucosa Prolapsing Through the Pylorus Am J Roentgenol **15** 295 1926

[7] *Melamed A and Hiller R I* Prolapsed Gastric Mucosa Roentgenologic Demonstration of Ulcer Crater in Prolapsed Polypoid Mucosa Am. J Digest Dis **10** 93 1943

[8] *Ferguson I A* Prolapse of Gastric Mucosa Report of 6 Cases, Ann Surg **127**: 879 1948

[9] DiLeo J L Kuker L J and Shepard R M Prolapse of Gastric Mucosa *into the* Duodenum Case Report and Analysis of Reported Cases New Orleans M & S J **101** 428 1949

pulled through the pyloric ring Studies of associated disturbed physiology of the stomach, as determined by gastric acidity, failed to show any correlation Gastric acidity from zero degrees free and 13 degrees total to 75 degrees free and 90 degrees total was reported Gastric motility, as demonstrated under fluoroscopy with a barium meal, also varied with the degree of pyloric obstruction present.

INCIDENCE

Prolapse of the gastric mucosa is found more commonly in the older age group, the majority of cases occurring in the fourth and fifth decades There is a predilection for the male sex There were 28 males and 16 females in the collected series, a ratio of approximately 1 8 to 1 The incidence does not vary according to race

SYMPTOMS

The clinical picture of prolapsed gastric mucosa is so variable that a definite diagnosis cannot be made from symptoms alone The history of symptoms ranges from several weeks to 10 or more years and from mild to severe (table 3) The more frequent complaints are those of epigastric distress, nausea, and vomiting aggravated by the taking of solid food This was present in two of our cases In cases of severe prolapses nausea and vomiting probably indicate a more complete pyloric obstruction In the collected series of cases more commonly noted were epigastric pain of varying intensity (61 5%), digestive symptoms, such as indigestion, nausea, and loss of appetite (36 4%), vomiting (15 9%), epigastric fulness (13 6%), gastrointestinal bleeding as revealed by hematemesis and melena, or persistent occult blood in the stool (40 9%) (table 4) We believe the latter finding to be significant and feel that every case of unexplained gastrointestinal bleeding should be investigated from the standpoint of a possible prolapse The symptoms are not specific and may be imitated by a variety of upper abdominal diseases They are produced by a partial block of the pylorus by the redundant prolapsed mucosa that is intermittently pushed through the pyloric ring Trauma to the mucosa can cause superficial erosions which might cause bleeding

PHYSICAL FINDINGS

The physical findings in most cases are entirely noncontributory Cove and Curphey were able to feel a soft, doughy mass in the epigastrium in two of their five cases We were unable to feel a mass in any of our four cases, though the patients were examined by a number of physicians at various times Localized tenderness was found in some of the other cases of the collected series, and some showed evidence of weight loss or anemia

LABORATORY DATA

The laboratory findings sometimes demonstrated a mild or moderately severe anemia The gastric analysis usually shows a normal acidity Scott[5] reported that in two-thirds of the cases the values were within normal limits or below and in one-third there was hyperacidity Persistent occult blood in the stool is found in approximately 40 9%

X-RAY DATA

X-ray is the most valuable aid in establishing a correct diagnosis A central filling defect near the base of the bulb, giving a mushroomlike appearance is the characteristic picture Often the gastric rugae can be traced into the defect (Apr 10, 1914) (figs 1, 3, and 4) The prolapse has been more readily demonstrated in the prone than in the erect position Retention is not necessary for the roentgenological diagnosis, and hyperperistalsis is not a constant finding Teitelbaum[12] cites a case which he saw on fluoroscopy and reduced the prolapsed mucosa back through the pyloric ring The prolapse, however, is not always seen on fluoroscopy, and films should always be made Since the mucosal prolapse is often intermittent, it may be necessary to take repeated x-rays before a definite diagnosis can be made In a case reported by Moon and Speed[10r] the first two gastrointestinal series disclosed normal conditions but the third examination revealed a prolapsed gastric mucosa Cove and Curphey[5] had a similar experience in one of their cases In three of our four cases a diagnosis was made by x-ray In reviewing the x-rays made on the fourth case, the roentgenologist found them suggestive and felt that if he had kept this condition in mind he probably would have made the correct diagnosis In this case the filling defect was interpreted as a probable carcinoma of the stomach In the collected cases a pattern characteristic of a mucosal prolapse was observed on x-ray in 28 cases

The condition must be differentiated from pyloric ulcer, hypertrophic gastritis, prolapsing gastric polyps, duodenal polyps, and carcinoma of the stomach A definite diagnosis can be made only by exploratory laparotomy and gastrotomy

TREATMENT

All the patients with a prolapsed gastric mucosa should have a trial of medical management which should include a bland, soft diet and antispasmodic drugs If they fail to respond to treatment in a month, an exploratory laparotomy is indicated Several types of operations have been suggested and performed These include excision of the redundant mucosa and pyloroplasty, gastric resection, gastroenterostomy, simple excision of redundant mucosa, excision of the mucosa and gastroenterostomy, pyloroplasty, and closure of the pylorus and gastroenterostomy Of our four patients, one had a Heineke-Mikulicz pyloroplasty with a good result Two had an excision of redundant mucosa and a Heineke-Mikulicz pyloroplasty One had an excellent result, and the other, age 81 died of other causes seven days after the operation The fourth

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10 (*a*) Schmieden[1] (*b*) Eliason E L and Wright V W M Benign Tumors of the Stomach Surg Gynec & Obst 41 461 1925 (*c*) Eliason Pendergass and Wright[6] (*d*) Meyer K A and Singer H A Intermittent Gastric Ileus Due to Mechanical Causes Surg Gynec & Obst. 53 742 1931 (*e*) Pendergass E P and Andrews J R Prolapsing Lesions of the Gastric Mucosa Am J Roentgenol 31:637 1935 (*f*) Rees[4] (*g*) Bohrer J V and Copleman B Prolapsing Redundant Gastric Mucosa Case Report Radiology 31 220 1938 (*h*) Archer V W and Cooper G Jr Prolapse of the Gastric Mucosa South M J 32:252, 1939 (*i*) Melamed and Hiller[7] (*j*) Norgore M and Shuler J J D Extrusion of Gastric Mucosa Through Pylorus Report on 2 Patients Treated by Partial Gastrectomy Surgery 18 452 1945 (*k*) Scott[5] (*l*) MacKenzie W C MacLeod J W and Bouchard J L Trans Pyloric Prolapse of Redundant Gastric Mucosal Folds Canad M A J 54 553 1946 (*m*) Appleby L H Prolapsing Gastric Mucosa J Internat Coll Surgeons 10:135 1947 (*n*) Judd E S and Moe A E Chronic Hypertrophic Gastritis Complicated by Obstruction Report of a Case Proc Staff Meet Mayo Clin 22:241 1947 (*o*) Nygaard K K and Lewitan A Transpyloric Herniation of Redundant Gastric Mucosa, Am J Surg 75:502 1948 (*p*) Dilheo Kuker and Shepard[8] (*q*) Ferguson[8] (*r*) Moon A E and Speed T Prolapse of Gastric Mucosa Through the Pyloma Presentation of a Case with Severe Hemorrhage South M J 42:839 1949 (*s*) Cove and Curphey[5]

11 Bralow S P and Melamed M Prolapse of Redundant or Hypertrophied Gastric Mucosa Am J Digest Dis 14:219 1947

12. Teitelbaum, M Personal communication to the authors

TABLE 1 —*Analysis of 44 Cases*

Author	Year	Age	Sex	Symptoms	Duration
Schmieden [1]	1911	27	F	Vomiting epigastric pain	7 mo
Eliason and Wright [10b]	1925	56	M	Not stated	Not stated
Eliason Pendergass and Wright [6]	1926	61	M	Epigastric cramps	5 mo
Eliason Pendergass and Wright [6]	1926	29	M	Indigestion	Not stated
Meyer and Singer [10d]	1931	42	M	Indigestion vomiting	2 mo
Pendergass and Andrews [10]	1935	70	M	Indigestion	15 yr
Pendergass and Andrews [10e]	1935	37	F	Indigestion	1 yr
Pendergass and Andrews [10e]	1937	46	M	Indigestion	5 yr
Rees [4]	1937	53	F	R U Q pain fulness	5 yr
Rees [4]	1937	48	F	R U Q pain fulness	Years
Rees [4]	1937	33	M	Vomiting	8 mo
Bober and Copleman [10g]	1937	57	M	Pain vomiting hematemesis	20 yr
Archer and Cooper [10h]	1939	29	F	Indigestion epigastric distress	11 yr
Archer and Cooper [10h]	1939	27	M	Epigastric pain vomiting	Not stated
Archer and Cooper [10h]	1939	51	M	Tarry stools, weakness anemia	2 yr
Archer and Cooper [10h]	1939	58	M	Indigestion hemorrhages	3 yr
Melamed and Hiller [7]	1913	39	F	Fainting weakness	3 mo
Norgore and Shuler [10i]	1915	61	F	Epigastric pain	1 yr
Norgore and Shuler [10i]	1915	42	M	Epigastric pain	2 yr
Scott [3]	1946	25	M	Indigestion epigastric pain	19 mo
Scott [3]	1916	41	M	Epigastric pain	2 yr
Scott [3]	1946	34	M	Indigestion epigastric pain	2 yr
Scott [3]	1946	31	M	Epigastric pain	5 mo
Mackenzie MacLeod Bouchard [10l]	1916	29	M	Fulness indigestion	20 mo
Mackenzie MacLeod Bouchard [10l]	1916	48	M	Epigastric pain ulcer healed	Not stated
Appleby [10m]	1947	64	F	Weight loss indigestion	10 yr
Appleby [10m]	1947	52	M	Weight loss indigestion	7 yr
Appleby [10m]	1947	44	F	Epigastric pain vomiting weight loss	Years
Appleby [10m]	1917	57	F	Cramping pain fulness weight loss	8 yr
Appleby [10m]	1917	65	F	Fulness pain weight loss indigestion	3 yr
Appleby [10m]	1947	43	M	Fulness weight loss epigastric distress	Years
Judd and Moe [10n]	1947	53	M	Fulness indigestion	12 mo
Nygaard and Lewitan [10o]	1948	45	M	Indigestion	13 yr
DiLeo Kuker and Shepard [9]	1948	65	F	Epigastric pain indigestion	2 yr
Ferguson [8]	1948	35	M	Epigastric pain hematemesis melena	Several yr
Moon and Speed [10r]	1949	55	F	Epigastric pain melena weakness	2 yr
Cove and Curphey [5]	1949	45	M	Pain in upper abdomen	Several yr
Cove and Curphey [5]	1949	35	F	Weight loss pain in upper abdomen nausea	4 5 yr
Cove and Curphey [5]	1949	82	M	Pain in epigastrium vomiting	4 yr
Cove and Curphey [5]	1949	61	M	Hematemesis 6 times in 5 yr	5 yr
Cove and Curphey [5]	1949	54	F	Pain in epigastrium aggravated by food	4 5 yr
Kaplan and Shepard	1950	55	M	Periumbilical pain aggravated by food	Several yr
Kaplan and Shepard	1950	42	M	Weakness epigastric discomfort anorexia	Several mo
Kaplan and Shepard	1950	81	F	Vomiting aggravated by food	3 mo

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* R U Q indicates right upper abdominal quadrant

Hemorrhage	X Ray	Acidity	Operation	Pathology	Result
None	Irregularity of pylorus	Normal	Excision of mucosa	Fold of mucosa inflamed	'Cure
None	Prolapsed mucosa	Not stated	Gastrostomy	Prolapsed mucosa	Not stated
None	Constant defect of duodenum	Not stated	Gastroenterostomy excision of prolapsed mucosa	Prolapsed mucosa	No follow up
None	Constant defect of duodenum	Not stated	Gastroenterostomy excision of prolapsed mucosa	Prolapsed mucosa	'Healed
None	Irregularity of pyloric area	0 free	Resection of mucosa	Chronic gastritis	Well 3 mo later
None	Prolapsed mucosa	Normal	Excision of mucosa gastroenterostomy	Redundant mucosa ulcer post wall	Improved no follow up
None	Prolapsed mucosa	30 free 86 total	Excision of mucosa	Prolapsed mucosa	Well 4 yr later
Two bouts hematemesis	Filling defect of pylorus	45 free 60 total	Pyloroplasty	Redundant mucosa	Recurrence of symptoms 2 yr later
None	Mucosal pouching 6 hr residue	Not reported	Closure of pylorus gastroenterostomy	Prolapsed mucosa	Unimproved
None	Prolapse no retention	Not stated	Section of pylorus excision of mucosa	Prolapsed mucosa	Well follow up not stated
None	Prolapsed mucosa	Not stated	Excision of mucosa	Prolapsed mucosa	Well follow up not stated
Hematemesis 15 yr	Prolapse no retention	Not stated	Excision of mucosa Horsley pyloroplasty	Prolapsed mucosa	Died 4 mo later septicemia
Hematemesis melena anemia	Prolapsed mucosa	82 free 42 total	Pyloroplasty	Prolapse tight pylorus	Relieved when discharged
None	Prolapsed mucosa	Not stated	Heineke-Mikulicz pyloroplasty	Prolapsed mucosa	Relieved when discharged
Melena	Normal	Not stated	Pyloroplasty	Prolapse tight mucosa	Recurrence of hemorrhages
Hematemesis melena	Prolapse old gastroenterostomy	Not stated	Horsley pyloroplasty	Healed ulcer prolapse	Small hemorrhage 6 mo later
Melena	Filling defect in antrum	Not stated	Excision of mucosa	Hypertrophy healed ulcers	Well 1 mo later
None	Prolapsed mucosa	70 free 90 total	Gastric resection	Chr gastritis prolapse	Died 4 mo later stomach normal
None	Healed ulcer prolapse	60 free 85 total	Gastric resection	Gastritis prolapse with obstruction	Well at discharge
Occult blood	Deformed bulb	11 free 27 total	Resection of mucosa Finney pyloroplasty	Normal mucosa	Well 1 yr later
Occult blood	Prolapsed mucosa	0 free 18 total	Resection of mucosa Heineke-Mikulicz pyloroplasty	Prolapsed mucosa	Well 1 yr later
Occult blood	Protruding mucosa	Normal	Resection of mucosa Heineke-Mikulicz pyloroplasty	Prolapsed mucosa	Well 1 yr later
Hematemesis 500 cc	Prolapsed mucosa	34 free	Resection of mucosa Heineke-Mikulicz pyloroplasty	Prolapsed mucosa	Well 6 mo later
None	Filling defect	Normal	Resection of mucosa Heineke-Mikulicz pyloroplasty	*Prolapsed mucosa*	No *follow-up*
None	Narrowing of prepyloric region	0 free 30 total	Resection of mucosa Heineke Mikulicz pyloroplasty	Simple inflammation	No follow up
Anemia occult blood	Prolapse	0 free 66 total	Gastric resection	Gastritis superficial ulcer	Well until dead 3 yr later
None	Pyloric obst old gastroenterostomy	60 free 78 total	Gastric resection	Edema prolapse	Well 13 yr
None	Prolapsed mucosa	40 free 70 total	Gastric resection	Edema prolapse	No follow up
None	Prolapsed mucosa	2 free 33 total	Gastric resection	Gastritis prolapse	Well 5 yr later
None	Prolapse retention	0 free 60 total	Gastric resection	Prolapse	Well 3 yr later
None	Prolapse	14 free 65 total	Gastric resection	Prolapsed mucosa	Objectively normal 10 mo later
None	Obstructing lesion	0 free 6 total	Gastric resection	Prolapse gastritis	Well at discharge
Hematemesis	Prolapse	0 free 15 total	Gastric resection	Chr gastritis healed erosion gastritis	Well 1 mo later
Hematemesis melena	Prolapse duodenal diverticulum	Not stated	Excision of mucosa	Prolapse chr gastritis	Well 6 mo later
Hematemesis melena	Prolapsed gastric mucosa	Not stated	Resection of mucosa *Finney pyloroplasty*	Normal mucosa	Asymptomatic
Melena	Prolapsed gastric mucosa	Not stated	Gastric resection pyloroplasty	Redundant mucosa petechial hemorrhage	Good 8 mo after
None	Prolapsed gastric mucosa	Not stated	Resection of mucosa Finney pyloroplasty	Not stated	Asymptomatic 1 yr later
None	Prolapsed gastric mucosa	Not stated	Resection of redundant mucosa Finney pyloroplasty	Not stated	Asymptomatic
None	Prolapsed gastric mucosa	Not stated	Resection of mucosa pyloroplasty	Not stated	Asymptomatic 3 mo later
Hematemesis	Prolapsed gastric mucosa	Not stated	Resection of redundant mucosa Horsley pyloroplasty	Not stated	Asymptomatic 3 mo later
None	Prolapsed gastric mucosa	Not stated	Resection of redundant mucosa Heineke-Mikulicz pyloroplasty	Not stated	Asymptomatic
Hematemesis melena	Prolapsed gastric mucosa	HCl free 57	Resection of gastric mucosa	Gastritis	Pyloric obstruction developed
None	Suggestive of gastric Ca	Not stated	Heineke-Mikulicz pyloroplasty	Chronic gastritis	Asymptomatic
None	Prolapsed gastric mucosa	HCl free 41	Resection of redundant *mucosa Heineke-Mikulicz pyloroplasty*	Chronic gastritis	Died

had simple excision of the redundant mucosa In this patient an obstruction developed at the pylorus, necessitating reoperation We found a circular stricture at the pyloris Because of very dense adhesions about the pylorus, a gastroenterostomy was performed Four months later the patient was asymptomatic

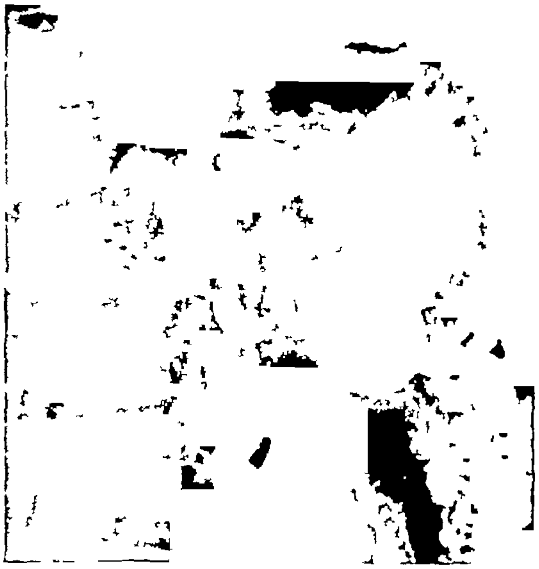

Fig 1 (case 1)—Preoperative gastrointestinal series showing typical mushroomlike appearance characteristic of prolapse of gastric mucosa into duodenum

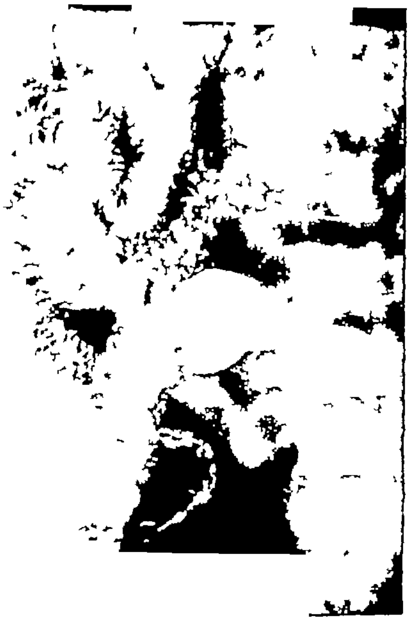

Fig. 2 (case 2)—Preoperative gastrointestinal series showing central defect at base of duodenum

OPERATIVE PROCEDURE

From our experience with four cases and an analysis of the collected series, we feel that the following procedure should be carried out After the abdomen is opened, the upper cavity should be explored, with special attention to the stomach and duodenum In our four cases external examination of the stomach and duodenum revealed no abnormality If no lesion is found, the stomach should be opened very near the pylorus in its long axis In one of our cases we made a high opening in the stomach and then extended it through the pylorus and then, after excising the redundant mucosa, closed the stomach and duodenum in a longitudinal manner without doing a pyloroplasty This is the case in which a stricture at the pylorus resulted With the stomach open the gastric rugae should be thoroughly examined They should be placed on stretch in sections with a moistened sponge on a sponge holder Small ulcerations or growths concealed in one of these folds can be easily overlooked If no pathological conditions are found, attention should be directed toward the pylorus and duodenum If a prolapsed mucosa is present, it can easily be demonstrated It can be pulled back into the stomach as a circular fold with a pair of Allis forceps This fold should also be examined for growths or ulcerations Melamed[7] reports one case in which a large ulcer was found in the prolapsed mucosa Rubin[13] reports a case in which a resected specimen revealed malignant change The first portion of the duodenum should be thoroughly examined This can be facilitated by cutting through the pyloric ring in the long axis of the stomach The redundant fold is tented upward by grasping it at several places with Allis forceps A cleavage plane is developed between the mucosa and the submucosa about 1 cm proximal to the pyloric ring with a curved hemostat, and by blunt dissection it is separated transversely and circularly from the submucosa until the opposite cut edge is reached The raised redundant fold is then cut away The cut edges of the mucosa are then approximated and at the same time fixed to the submucosa with interrupted chromic 00 sutures The opening in the stomach and duodenum is then closed by some form of pyloroplasty, such as the Heineke-Mikulicz, Finney, or Horsley type If a growth or an ulcerated area is found, a gastric resection should be performed

Table 2 —*Age Incidence*

Decade	Number of Cases
20-30	6
31-40	8
41 50	11
51-60	11
61 70	7
71-80	0
81 90	1

Average age is 45.5 yr

Table 3 —*Duration of Symptoms*

	No of Cases
Less than 1 yr	8
Over 1 yr	32
Not stated	4

Average duration 46.5 mo

REPORT OF CASES

Case 1 —A 55 year old Negro man complained of a pulling periumbilical pain of several years duration, which was aggravated by the taking of food He also gave a history of anal bleeding on two occasions, 18 and 12 mo previously Several weeks prior to admission he had a fainting spell following the passage of a large, liquid tarry stool Otherwise the history was essen

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13 Rubin J S *Prolapse of Polypoid Gastric Mucosa* into the Duodenum with Malignant Change, Radiology 38:362 1942.

tially noncontributory The physical examination findings were also noncontributory except for a slight tenderness in the epigastrium on pressure and the presence of blood, both red and dark, on anal digital examination Sigmoidoscopic examination revealed a small rectal polyp, which was not bleeding. Biopsy proved it benign, and it was felt at the time that it was not the cause of the patient s complaints A gastrointestinal series revealed a central filling defect near the pylorus, giving a mushroomlike appearance, which was interpreted by the roentgenologist as a prolapsed gastric mucosa Other laboratory procedures revealed a hemoglobin content of 8 9 gm per 100 cc 4,100,000 red blood cells, and 5,200 white cells of which 69% were polymorphonuclear forms, 27% lymphocytes, 1% eosinophils, and 3% monocytes The urine was normal The blood urea nitrogen level was 44 mg per 100 cc , serum protein level 6.51 gm , and chlorides 600 mEq Gastric analysis after injection of histamine showed blood (4 +), 57 degrees of free hydrochloric acid and 97 degrees of total acid The electrocardiogram was normal, x ray studies after a barium enema showed no abnormalities, and chest x ray (posteroanterior) was normal

On Dec 20 a right rectus muscle splitting incision was made The upper abdominal cavity was explored and found normal Transgastric exploration revealed a prolapsed mucosa through the pylorus A 4 cm fold of mucosa was excised The stomach was closed in its long axis without pyloroplasty For six days postoperatively the patient had persistent pyloric obstruction and distention Thereafter the course was uncomplicated until discharge Two weeks later the patient was readmitted to the hospital with persistent vomiting. Serial x-ray studies of the upper gastrointestinal tract revealed complete pyloric obstruction On reoperation a dense mass of adhesions surrounding the pylorus was found, and exploration of this area was unsatisfactory A gastroenterostomy was performed The patient s convalescence from this operation was uneventful, and when seen four months later he was asymptomatic and gaining weight

Table 4 —*Symptoms Commonly Observed*

Symptoms	Cases	
	No	Per Cent
Epigastric pain	27	61.5
Indigestion	16	36 4
Gastrointestinal bleeding	18	40.9
Weight loss	7	15 9
Epigastric fullness	6	13.6
Weakness	3	6 8
Vomiting	7	15.9

Table 5 —*Results of Gastric Analysis*

Acidity	No of Cases
Normal	14
Hyperacidity	8
Hypoacidity	3
Not indicated	19

Case 2 —T B a 42 year old white man complained of a weight loss of about 1 lb (0 5 kg.) a day for the last two months weakness in the legs, anorexia, and epigastric discomfort He gave no history of constipation, hematemesis nausea or vomiting, or tarry stools The history was otherwise noncontributory except for chronic alcoholism for many years but none for the past year The physical examination findings were normal Laboratory procedures revealed 3,790 000 red blood cells a hemoglobin content of 14 gm per 100 cc (90%), and a color index of 1 2. The gastrointestinal series revealed a deformity at the pylorus that the roentgenologist interpreted as a possible early carcinoma of the stomach With this diagnosis in mind an exploratory laparotomy was performed No lesion could be seen or palpated in the pyloric end of the stomach The stomach was opened in its long axis near the pylorus There was evidence of a chronic gastritis throughout and there was a redundant mucosa which herniated through the pyloric ring into the duodenum A Heineke-Mikulicz pyloroplasty was performed

After surgery the patient s symptoms disappeared, and two and one half years later he is still asymptomatic.

Case 3 —Mrs P E an 81 year old white woman was well until three months before admission, when she began vomiting after each meal The vomiting increased in frequency and severity until she was unable to retain anything She also complained of epigastric discomfort, and there was some loss of weight. She had a cholecystectomy many years previous to admission The findings on physical examination were normal except for senility, moderate dehydration a small incisional hernia which contained no abdominal viscera and severe generalized osteoarthrosis Laboratory procedures revealed 4,800 000 red blood cells, a hemoglobin content of 14 5 gm per 100 cc 10 000 white cells of which 80% were polymorphonuclear forms and 20% small lymphocytes The hydrochloric acid level of the gastric contents was [illegible] The [illegible]

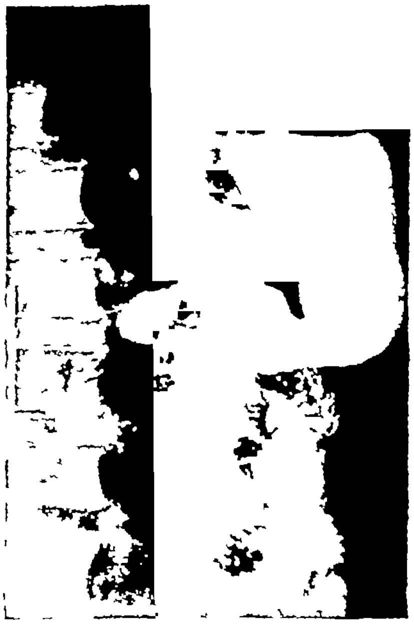

Fig 3 (case 3)—Preoperative gastrointestinal series showing central filling defect near base of bulb The gastric rugae can be traced into the defect

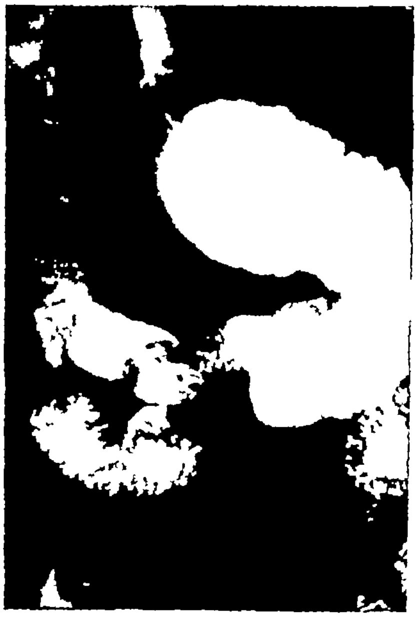

Fig. 4 (case 4)—Gastrointestinal series showing prolapsed mucosa into duodenum and large duodenal diverticulum at junction of second and third portion of duodenum normal The blood urea nitrogen level was 14 mg per 100 cc, serum protein level 7 2 gm, and chlorides 600 mEq Kahn and Kolmer reactions were negative The electrocardiogram revealed definite evidence of myocardial disease, x-ray studies after a barium enema disclosed diverticulosis of the sigmoid, and the gastrointestinal series showed a prolapsed gastric mucosa Because of the protracted vomiting, which did not respond to conservative therapy, an exploratory laparotomy was performed Transgastric exploration revealed a prolapsed gastric mucosa The redundant mucosa was excised, and a Heineke Mikulicz pyloroplasty was performed The ventral hernia was repaired in closing the abdominal wall The patient did not do well after surgery She became lethargic, and on the seventh postoperative day tachycardia, dyspnea, and many rales in both lungs developed In spite of digitalis, supportive drugs, oxygen, and other measures she died Complete autopsy revealed no anatomical cause of death

Case 4[14]—M R, a 65 year old Negro woman was admitted to Charity hospital on Dec 1, 1947, with the chief complaint of having vomited about 500 cc of coffeegrounds material the day before admission and later of passing several tarry stools Further questioning revealed that she had intermittent attacks of epigastric pain, indigestion, and occasional attacks of nausea and vomiting for the past two years There had been a loss of weight of 40 lb (18 1 kg) due to a low caloric diet prescribed by her physician for hypertension The following were the positive physical findings The blood pressure was 160/80 mm of mercury, the mucous membranes were pale, and an aortic systolic murmur was noted Rectal examination revealed black stool on the examining finger, which on a benzidine test gave a 4 + reaction for blood Laboratory studies revealed a hemoglobin content of 6 5 gm per 100 cc, 2,500,000 red blood cells, 3,555 white cells, of which 60% were polymorphonuclear forms, 34% lymphocytes, and 6% monoctyes The hematocrit reading was 19% The urine was normal Blood chemistry values were normal, and Kahn and Kolmer reactions were negative The gastrointestinal series revealed no definite abnormalities demonstrated on fluoroscopy The x-rays, however, showed prolapse of the gastric mucosa into the duodenum A diverticulum was noted in the region of the junction of the second and third portions of the duodenum There was no gastric retention The patient was placed on a high caloric, high protein diet and given a total of 1,500 cc of whole blood, raising the hematocrit reading to 38 mm On Dec 23, 1947, an exploratory procedure was performed through an upper right rectus muscle splitting incision The upper part of the abdomen was normal The stomach appeared and felt normal, except for a boggy mass in the pyloric region, extending into the first portion of the duodenum Transgastric exploration revealed a prolapsed gastric mucosa This was resected The gastrotomy opening was closed by a Heineke-Mikulicz pyloroplasty No attempt was made to remove the diverticulum The pathologist's report stated the specimen indicated chronic gastritis The postoperative course was uneventful A gastrointestinal series done on Jan 13, 1948, revealed no abnormality of the esophagus, stomach, or duodenum The diverticulum was again observed Six months postoperative the patient was asymptomatic and had gained 15 lb (6 8 kg)

SUMMARY

The literature of prolapse of the gastric mucosa into the duodenum is briefly reviewed Forty-one cases proved by surgery have been collected, and we have added four cases, one of which was previously reported The cause and the mechanism of the occurrence of prolapse of the gastric mucosa is not definitely known The lesion is probably a mechanical one based on a hypermotility of the gastric mucosa, which may be congenital or caused by conditions that produce abnormal motility that, over a period of time, loosens the mucosa from the submucosa to such an extent that a prolapse could occur Prolapse of the gastric mucosa is found more commonly in the older age group The majority of cases occur in the fourth and fifth decades The diagnosis cannot be made from the symptoms and physical findings X-ray is the most valuable aid in establishing a correct diagnosis A definite diagnosis can be made only by exploratory laparotomy and gastrotomy All patients with a prolapsed gastric mucosa should have a trial of medical management, which should include a bland, soft diet and antispasmodic drugs If they fail to respond to treatment in a month, an exploratory laparotomy is indicated When surgery is indicated, excision of the redundant mucosa with pyloroplasty gives excellent results

3439 Prytania St (Dr Kaplan)

[14] This case has been reported previously

TUBERCULOUS MENINGITIS CURED WITH STREPTOMYCIN

REPORT OF A CASE COMPLICATED BY RENAL AND URETERAL CALCULUS

Joseph T Aquilina, M D, Batavia, N Y

Until the advent of streptomycin, tuberculous meningitis was a uniformly hopeless and fatal disease The first successful use of streptomycin in the treatment of tuberculous meningitis was reported in January, 1946, by Cooke and associates,[1] who treated a 1-yr-old infant In October of the same year Krafchik[2] reported apparent arrest of tuberculous meningitis in a 15-mo-old infant Hinshaw and his colleagues[3] reported on a series of 12 patients with generalized hematogenous tuberculosis, nine of whom had clinical evidence of tuberculous meningitis Of the nine, only four survived, and of those surviving only one is normal and was still receiving treatment five months after admission

Appelbaum and Halkin[4] report a case of tuberculous meningitis associated with miliary tuberculosis in a 9-yr-old boy, with complete recovery Mehas and Truax[5] report the case of a 31-yr-old white woman in whom tuberculous meningitis was arrested after administration of 282 gm of streptomycin over a period of 175 days, there was some residual neurological involvement, however

Smith, Vollum, and Cairnes[6] reported 18 cases of tuberculous meningitis, of which 11 patients survived In two cases, though the patients were treated as having tuberculous meningitis, the laboratory diagnosis of tuberculous meningitis could not be established The

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From the Veterans Administration Hospital

Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions published by the author are a result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration

[1] Cooke R E Dunphy D L and Blake, F G Streptomycin in Tuberculous Meningitis A Report of Its Use in a One Year Old Infant Yale J Biol & Med 18 221 (Jan) 1946

authors treated their patients with streptomycin for periods varying from 68 to 255 days, using both intramuscular and intrathecal routes The longest-treated patient received 510 gm intramuscularly and 13 63 gm intrathecally over a period of 255 days

This paper reports a case of bacteriologically proved tuberculous meningitis in an Indian male who recovered after a long course of streptomycin therapy By reporting this case, I hope to encourage the vigorous treatment of cases of tuberculous meningitis and to add mine to the number of other successfully treated cases

REPORT OF CASE

History —J H was a 24-yr -old Indian male who was apparently in good health until January 1947, when he began to complain of frontal headaches He went to a private physician who treated him for sinusitis, but the headaches became more severe He also had symptoms of an upper respiratory infection, such as running nose, watery eyes and a general feeling of malaise

On Feb 14, 1947, the patient was admitted to a private hospital because of nausea, vomiting, and severe frontal headaches of four days' duration On the day of admission his senses were clear and his temperature was 99 F Later his temperature began spiking between 101 F and 104 F with a mean temperature by rectum of 102 F After Feb 18 the patient was delirious, disoriented, and restless, and did not respond to questioning Reports from the private hospital indicated that he had paralysis of the external rectus muscles of both eyes There was a slight facial weakness on the left side The pupils reacted to light, and nystagmus was absent Tendon reflexes in the left arm and left leg were absent Babinski s sign could not be elicited Spinal fluid examination revealed a pressure between 550 and 580 mm of water The fluid was clear, and early cultures yielded no growth On Feb 23 a repeat spinal fluid examination revealed pellicle formation in the fluid There were 300 cells per cubic centimeter, with 100% lymphocytes A neurosurgical consultant suggested a diagnosis of viral meningitis and the patient was started on streptomycin He was given 1 gm per day in the hope that, if the meningitis were caused by an influenzal type of organism, there might be some improvement in his condition The drug was discontinued after three days because there was no improvement

The patient was then admitted to the Veterans Administration Hospital at Batavia N Y , on Feb 24 1947, in the same condition as was noted at the other hospital He could be aroused by stimuli, but his answers were unreliable Additional history obtained from the patient s brother revealed that the patient s mother had died 20 years previously of pulmonary tuberculosis

Physical Examination —The patient was a well-developed, well nourished Indian male His rectal temperature was 102 F , blood pressure 110/70 He was lying in bed in a semicomatose state The conjunctivas were clear The pupils were widely dilated, round, regular, equal, and reacted sluggishly to light and accommodation Bilateral abducens (sixth cranial nerve) paralysis was complete Other extraocular muscles appeared to be undisturbed Bilateral papilledema was observed The tongue was dehydrated coated and protruded in the mid line There was no pharyngeal paralysis The neck was rigid and painful when flexion was attempted Examination of the lungs, heart, and abdomen revealed nothing abnormal There were no petechiae Lumbar puncture shortly after admission revealed an initial pressure of 380 mm of water The dynamics were normal and the fluid had a ground glass appearance

Laboratory Findings —On the day of admission to the hospital examination of the spinal fluid revealed 480 cells per cubic centimeter It contained 89% lymphocytes the colloidal gold curve was 0000000000, proteins were 110 mg per 100 cc spinal fluid sugar was 40 mg per 100 cc and blood sugar 80 mg per 100 cc Spinal fluid was negative on smear for bacteria and the fluid was inoculated into a guinea pig and cultured Urinalysis was noncontributory Blood chlorides were 610.5 mg per 100 cc , the red blood count was 4 990 000 per cubic centimeter, the white blood count was 12 200 per cubic centimeter with differential consisting of 80% polymorphonuclear cells 17% lymphocytes, 3% monocytes, the hemoglobin was 14 gm per 100 cc the Wassermann reaction was negative

Course in the Hospital —Based on the clinical signs of meningitis and the initial spinal fluid findings intensive antibiotic therapy was started Initially, this consisted of penicillin 40,000 units every three hours intramuscularly on Feb 26, 1947 streptomycin was started concurrently At that time the exact dosage of streptomycin was just being formulated by various investigators, and the patient was started on what today are considered extremely large doses He was given 4 gm of streptomycin daily in divided doses (500 mg every three hours) X rays of the chest on Feb 25 revealed small calcific deposits in the right apex and small, ill-defined calcified deposits in the right upper lobe However, this was not considered active pulmonary tuberculosis X rays of the skull showed no abnormality The patient remained drowsy His temperature was 100 4 F rectally, and he could not be aroused Spinal tap on Feb 26 revealed an initial pressure of 540 mm of water, 35 cc of "ground glass" fluid was drawn and final pressure was 350 mm of water

On March 1, 1947 sulfadiazine was started The drug was given in this instance to cover the remote possibility that the condition was caused by a meningococcus infection which occasionally has been known to escape bacteriological detection On March 2 the patient improved slightly, and his temperature became normal for the first time He began responding to questioning and was able to take nourishment by mouth, the next day, however he became more lethargic Nuchal rigidity was still present, and a bilateral positive Babinski sign could be elicited Spinal fluid pressure was 550 mm of water The patient had to be catheterized On March 6 the temperature became normal and the patient responded to questioning although he still had hallucinations He took fluids and solids well and began to regain bladder control On March 7 sulfadiazine was discontinued because of nausea and emesis, although it was realized that the symptoms could well have been caused by increased intracranial pressure On March 15 penicillin was discontinued The spinal fluid pressure at that time was 200 mm of water Spinal fluid cell count was extremely high and consisted predominantly of lymphocytes In spite of the decrease in spinal fluid pressure the patient appeared lethargic and weak, and the prognosis was extremely poor On March 20, upon the advice of the Streptomycin Committee of the Veterans Administration who controlled the distribution and use of the drug in the Veterans Administration, the patient s streptomycin dosage was reduced to 225 mg every four hours intramuscularly On March 21 the spinal fluid pressure went up to 600 mm of water

On March 24, one month after the patient s admission I was informed that the initial cultures of the spinal fluid on Feb 19 and Feb 20 were positive for tubercle bacilli, this was the first bacteriological proof that the case was one of tuberculous meningitis At the same time, the inoculated guinea pigs were autopsied and found to have tuberculosis On March 24 the spinal fluid pressure was 190 mm of water and of ground glass appearance the cell count was approximately 400 cells per cubic centimeter predominantly lymphocytes On March 25 it was decided to start streptomycin 100 mg intrathecally daily On April 24 approximately a month later the patient was able to sit up for repeat X rays of the chest which revealed very small calcific deposits in the lung field chiefly on the right There had been no essential change from the admission X rays of the chest On April 25 the white blood cell count was 8 100 per cubic centimeter with 20% eosinophils 58% polymorphonuclear cells and 22% lymphocytes On May 6 the white blood cell count was 8 100 per cubic centimeter, with 26% eosinophils Eyegrounds revealed bilateral optic atrophy and the patient had shadow vision only On May

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2 Krafchik L L Tuberculous Meningitis Treated With Streptomycin J A M A 132 375 (Oct 19) 1946

3 Hinshaw H C Feldman W H and Pfeutze K H Treatment of Tuberculosis with *Streptomycin A Summary of Observations on 100* Cases J A M A 132 778 (Nov 30) 1946

4 Appelbaum E and Halkin C Tuberculous Meningitis and Miliary Tuberculosis Arrested With Streptomycin J A M A 135:153 (Sept 20) 1947

5 Mehas C P and Truax W E Streptomycin in Tuberculous Meningitis J A M A 135 155 (Sept 20) 1947

6 Smith H V Vollum D L, and Cairnes H Treatment of Tuberculous Meningitis With Streptomycin A Report to the Medical Research Council Lancet 1 627 (April 24) 1948

10 the spinal fluid revealed 146 cells per cubic centimeter, mostly lymphocytes, with 240 mg per 100 cc of protein, and the spinal fluid sugar was 45 mg per 100 cc On May 13 intrathecal streptomycin was changed to 100 mg every other day The patient was incontinent of urine and feces at that time

A week later, on May 20, on advice of the Veterans Administration Streptomycin Committee, the streptomycin was reduced to 50 mg intrathecally every other day On May 29 the patient was allowed to sit up in a chair On June 16 intramuscular streptomycin was discontinued because I wanted to see what effect withdrawal of the drug would have on the patient's general course, however, intrathecal streptomycin was continued bi weekly On June 19 the patient was able to walk short distances with the aid of an attendant At that time he had received a total of 245 gm of streptomycin over a period of 111 days The total number of rachicenteses was 73 He had received approximately 6 gm of streptomycin intrathecally His weight now was 102 lb, as compared with his average weight of 160 lb

On June 28, 1947, when it was considered that the patient was having a recurrence of tuberculous meningitis, intramuscular streptomycin was resumed at a dosage of 225 mg every three hours The ophthalmologist reported that light perception was absent in the left eye, and that the optic disks were pale bilaterally, indicating optic atrophy He thought that he could see a tubercle in the choroid of the left eye On Aug 16, 1947, the patient was using a walker He still had visual difficulty, being blind in the left eye, but vision was improving in the right eye He complained of severe weakness of the extremities

All streptomycin therapy was discontinued on Aug 23, the patient having received 350 8 gm of streptomycin intramuscularly over a period of 168 days and 6 95 gm of streptomycin intrathecally over a period of 85 days The patient remained afebrile without streptomycin until Sept 12, when his temperature and pulse rate became elevated, and he had frequent attacks of nausea, with emesis and abdominal pain No new physical findings were elicited, except tenderness in the left upper quadrant There was still weakness of the left side of the face and body and a few days later urinalysis revealed 80 to 120 white blood cells per high powered field When it became apparent that he had a urinary infection, sulfadiazine was initiated on Sept. 16 Streptomycin was withheld, and a repeat rachicentesis revealed the pressure to be 120 mm of water The fluid was clear and colorless, containing 8 lymphocytes per cubic centimeter and 35 mg per 100 cc of protein An intravenous pyelogram on Oct. 8 revealed a calculus in the right renal pelvis and lack of function of the left kidney (Fig 1)

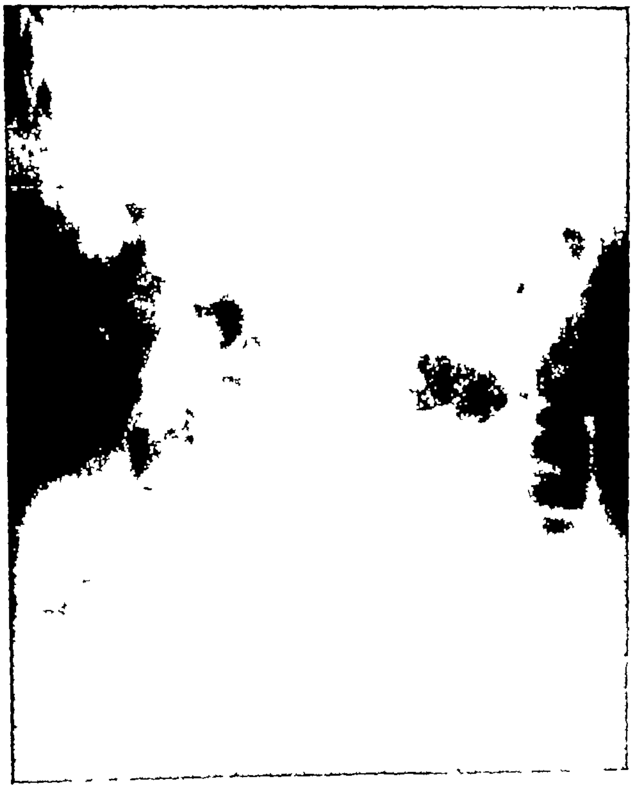

Fig 1 —Intravenous pyelogram on Oct. 8 1947 showing a calculus in right renal pelvis Note the absence of dye in left kidney

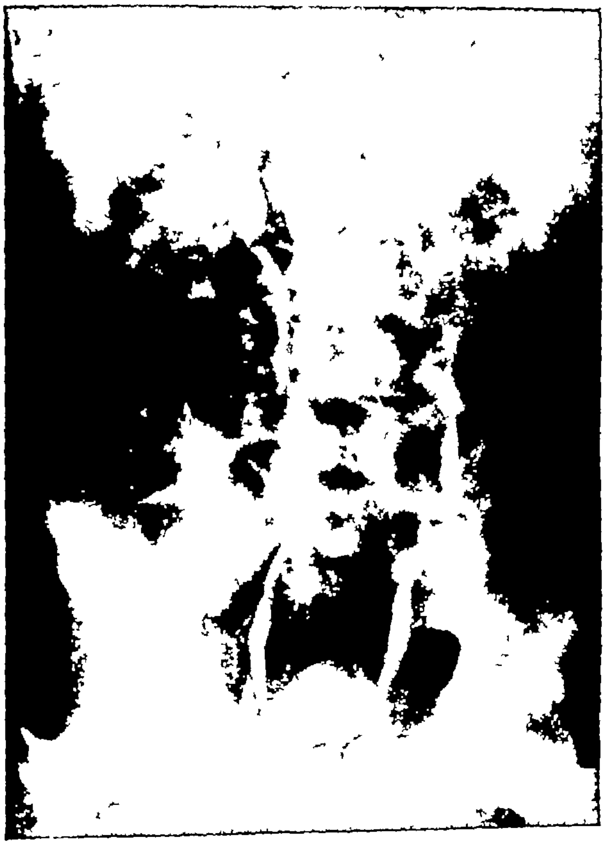

Fig 2 —Retrograde pyelogram on Oct. 23 1947 This demonstrates a large calculus in the right kidney right hydronephrosis and obstructing calculus in the left ureter

On Oct 23 cystoscopy and retrograde pyelogram revealed severe cystitis, ureteritis, right hydronephrosis with a stone in the pelvis of the right kidney, and an obstructing calculus in the left ureter (Fig 2)

On Nov 6 the left kidney was explored A nodular mass in the left ureter was excised and a stone 1 mm in diameter was removed Nephrostomy was then performed to drain urine from the left kidney On repeated attempts to catheterize the left ureter, the catheter met an obstruction On Jan 20, 1948, the Foley catheter in the left nephrostomy wound was accidentally cut by a ward attendant, and a new catheter could not be reinserted through the left nephrostomy wound into the left renal pelvis The wound continued to drain a small amount of urine, but no urine drained into the left ureter

Another intravenous pyelogram on Feb 12, 1948, showed no excretion on the left side but good excretion on the right

Cystoscopy was performed several times, but each time the left ureteral catheter met an obstruction Cultures for acid fast bacilli were negative

The urologist consultant thought that the patient had tuberculosis of the right kidney and a functionless left kidney The patient was sent to a convalescent center on June 24, 1948, for a period of three months. He returned Sept 22, 1948, to the Veterans Administration Hospital in Batavia for further observation and convalescence Physical examination at that time revealed a healthy looking Indian male, well oriented, alert and walking with the aid of a cane He weighed 150 lb He could see well with his right eye, but vision with the left eye was still poor The right pupil reacted to light and accommodation, the left pupil did not. His blood pressure was 130/100, the heart tones were good The left nephrostomy wound had closed The left leg showed slight decrease in diameter, and there was some slight weakness of the *right leg Positive bilateral* Babinski signs could still be elicited The ophthalmologist reported 20/30 vision of the right eye but no light perception of the left eye There still was bilateral optic *atrophy, more pronounced* on the left X rays of the chest showed no change from the previous examination An intravenous pyelogram revealed in the right upper quadrant dense, laminated, oval shadows that had the appearance of stones in the pelvis of the right kidney Iodopyracet injection U S P (diodrast®) was excreted promptly on the right There was no excretion on the left The right pelvis was still slightly dilated The urinalysis was noncontributory The blood proteins were 7 1 gm per 100 cc The specific gravity of the urine ranged between 1 001 and 1 010 The Wassermann test was negative The blood urea was 14 9 mg per 100 cc , red blood cell count 4,670,000 per cubic centimeter, white blood cell count 6,750 per cubic centimeter and hemoglobin 13 5 gm per 100 cc On culture and guinea pig inoculation the urine proved to be negative for tubercle bacilli

The patient was discharged on Nov 2 1948 On Nov 15 he was admitted to the Rehabilitation Center of the Veterans Administration Hospital, Bath N Y , where he underwent an intensive physical medicine rehabilitation As part of this program intravenous and retrograde pyelograms were performed on *Dec 16, 1948* These revealed bilateral nephrolithiasis, a large laminated calculus in the right renal pelvis and a left ureteral calculus (Figs 3 and 4) Function of the right kidney was good the left kidney showed no function The patient was then *trans*ferred to the urologic service It was thought best to remove the functionless left kidney It was decided that the right kidney should be operated upon first, however in order to prevent possible anuria from the large calculus which might act as a ball valve and shut off the patient s only functioning kidney A right pyelolithotomy and nephrostomy was then performed, and mush phosphatase calculus was extracted from the right part of the pelvis

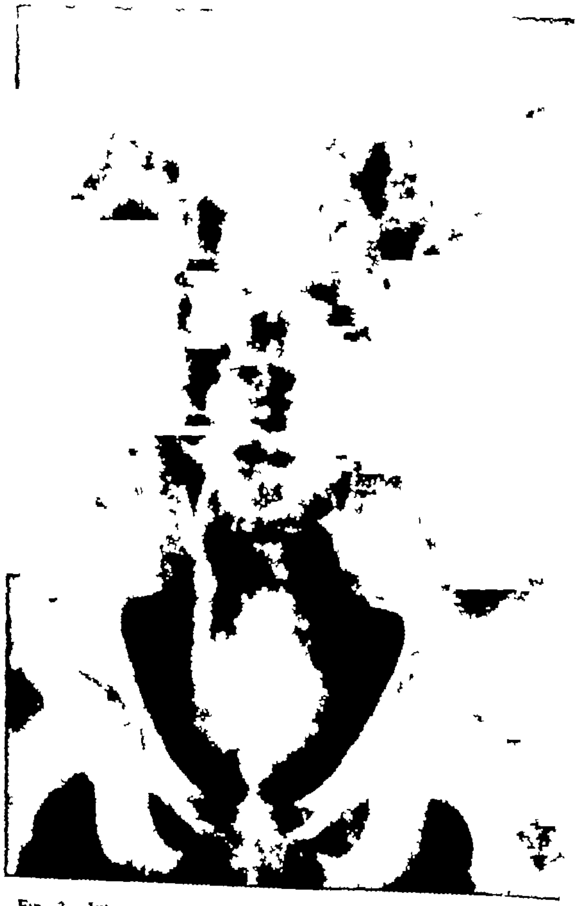

Fig 3 — Intravenous *pyelogram on Dec 16 1948* again showing the large calculus in the *right kidney* and lack of function of the left kedney Excretion of dve by the right kidney was prompt.

The postoperative course was stormy The patient became uremic, the nonprotein nitrogen went up to 77 mg and he had marked singultus The blood chlorides were *385 mg per 100 cc* His temperature was 100 F On intravenous fluid and supportive therapy he improved considerably On Jan 6, 1949, *the nephr* tomy tube from the right kidney fell out and could not be inserted An intravenous pyelogram showed good function *the right* On Jan 13 a left nephrectomy was performed Pat *logic* examination of the left kidney revealed left pyelonephr and chronic ureteritis The stone proved to be triple phospha There was no gross or microscopic evidence of tuberculosis the left kidney On Jan 25 *an intravenous* urogram reveal good kidney function on the right, and the patient was tra ferred back to the Rehabilitation *Center*, where he underwent course of medical rehabilitation *During* this period his intel *gence quotient* was 96 His only symptoms were slight weakn in the *left leg* and absence of vision in the *left eye* He was d charged June 22, 1949

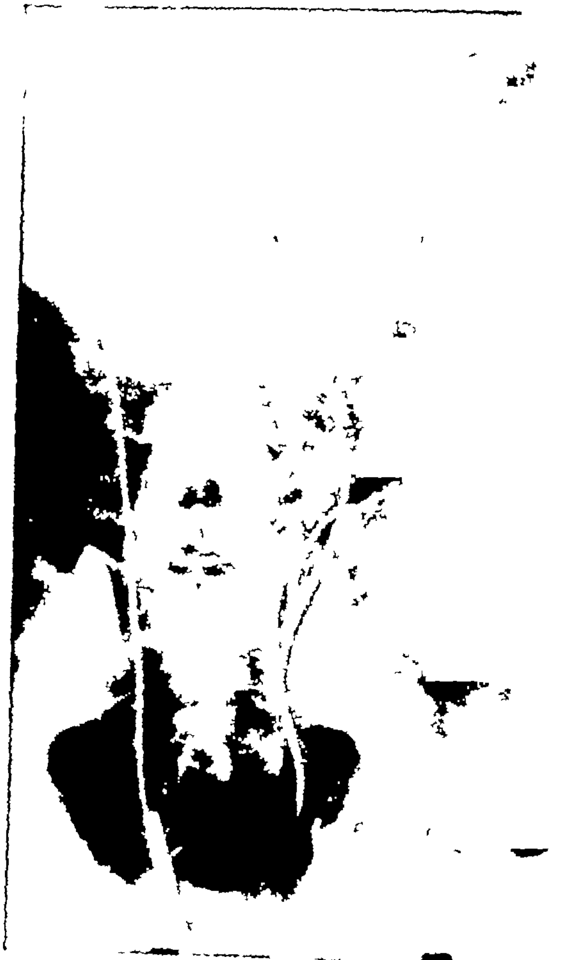

Fig 4 —Retrograde pyelogram on Dec 16 1948 *Note* again the l laminated calculus *this time more clearly outlined.* Also note the calc in the left ureter

The patient was readmitted to the Veterans Administrati Hospital *Batavia*, in *December 1949 for follow-up* He a peared well nourished, *alert*, and cooperative The only positi findings on physical examination were absence of vision in t left eye and slight weakness of the left leg, which were noted the time of his discharge from the Bath Rehabilitation Center June 1949 Spinal fluid examination and *blood chemistry* we normal Urinalysis, however, revealed a low grade urinary tra infection that completely cleared on penicillin therapy Intelli gence quotient was 101 After a short period of observation th patient was discharged to his home on an Indian reservation

COMMENT

So far as I have been able to determine, this is the only case of recovery from tuberculous meningitis in an Indian male With the exception of a few days, the patient was under vigorous and continued treatment from Feb 26, 1947, through Aug 23, 1947, and he received over a period of 168 days 350 8 gm of streptomycin intramuscularly, and over a period of 85 days 6 9 gm of streptomycin intrathecally During this course of treatment the only sign of sensitivity to the drug was a marked eosinophilia for several days, this disappeared without cessation of drug therapy or reduction in dosage This was also noted by Mehas and Traux in their case [5]

The spinal fluid pressure and analysis returned to normal on Aug 12, 1947, approximately six months after initial treatment A complete spinal fluid examination elicited normal findings on Oct 6, 1947, and Dec 6, 1949

The patient was cured of his tuberculous meningitis, and except for urinary complication he made a remarkable recovery, the only residuals being blindness in the left eye and slight weakness in the left leg

As to the pathogenesis of the calculus formation in the urine, we can only speculate I feel that this calculus formation, which resulted in the removal of the left kidney, was the result of demineralization of the bones, associated with a prolonged bedrest Added to this may have been insufficient quantities of fluids and the large doses of streptomycin The patient is alive and well and has been followed for three years since the onset of his illness

SUMMARY

A case of tuberculous meningitis, treated by streptomycin, is presented The diagnosis was established by culture and guinea pig inoculation The patient was alive and well three years after the onset of his illness The treatment consisted of 350 8 gm of streptomycin administered intramuscularly over a period of 168 days, and 6 9 gm intrathecally over a period of 85 days Calculus formation was observed as a complication, and the only residuals of tuberculous meningitis were blindness is the left eye and slight weakness of the left leg

Veterans Administration Hospital

Drug Therapy of Hypertension—The time is not yet ripe for a final assessment of the value of drug therapy in the management of hypertension Current opinion may, however, be summarized as follows brief reduction in pressure in emergency can be achieved with nitrites or T E A B (tetraethylammonium bromide) heavy sedation with barbiturates will result in some reduction in pressure in most cases for as long as the narcosis is maintained, the long term reduction of pressure in at least a proportion of established cases of hypertension can be achieved by the ganglionic blocking action of the methonium drugs, and their use constitutes probably the most encouraging forward step in the drug therapy of hypertension at the present time Careful assessment of each individual case in respect of response dosage and tolerance is required, there is no rule-of-thumb schedule of dose to be followed, occasional serious toxic effects occur, and complete failure to respond, especially with oral administration, is fairly common Preparations of *Veratrum* and other vegetable derivatives are still under trial, and their general use in practice is far from practicable —Ian G W Hill, M B The Drug Treatment of Hypertension *The Practitioner,* June, 1951

CLINICAL NOTES

BONE MARROW AND FAT EMBOLISM FOLLOWING MULTIPLE FRACTURES

S W Berkheiser, M D
and
Horace K Giffen, M D , Youngstown, Ohio

Fat embolism secondary to trauma of the skeletal system has long been recognized and frequently reported Bone marrow embolism has also been observed, but seldom reported, and it has rarely received prominence in the literature

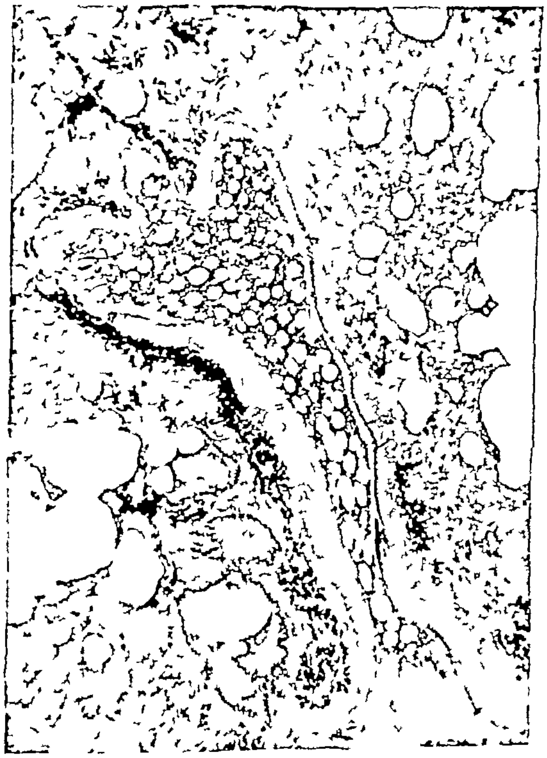

Fig 1 —A branch of pulmonary artery (1 0 mm) almost completely filled by bone marrow embolus Hematoxylin-eosin stain (× 35)

In 1943, Schenken and Coleman [1] reported a single case associated with a fracture of the left femur, and cited one case from the German literature [2]

Survey of the literature up to 1948 reveals only three additional cases, which were reported by Lindsay and Moon [3] Their first case was associated with multiple injuries and a fracture of the right femur The remaining two cases were associated with multiple fractures of the skeletal system Schenken and Coleman found bone marrow emboli in two (1-2 mm) branches of the pul-

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From the Laboratories of the Youngstown Hospital Association.

[1] Schenken J R and Coleman F C Bone Marrow and Fat Embolism Following Fracture of the Femur Am J Surg 61 126 1943

[2] Henke F and Lubarsch, O *Handbuch der speziellen pathologischen Anatomie und Histologie* Berlin Springer Verlag 1931 vol. 3 pt. 3 pp 104-107

[3] *Lindsay S and Moon* H D Bone-Marrow Embolism Following Fracture J Bone and Joint Surg 28 377 380 1946

monary artery In each of Lindsay and Moon's cases, bone marrow emboli were found in a single branch of the pulmonary artery

It is the purpose of this paper to report a case of widespread fat and multiple bone marrow embolism following fractures of the right radius, right temporal bone, and right supraorbital ridge Bone marow emboli were found in four branches of the pulmonary arteries

REPORT OF CASE

A white man, 82, was admitted to South Unit, Youngstown Hospital on March 18, 1950, because of pain in the right wrist after a fall at his home Roentgenogram revealed a comminuted fracture of the distal portion of the right radius with slight posterior dislocation of the carpal bones of the hand The fracture was reduced with the patient under general anesthesia (ether) There was some difficulty in attainment of adequate anesthesia however, reduction of the fracture was performed smoothly The patient appeared in good condition on return to the ward and conversed freely with fellow patients Two hours after his return to the ward he was found dead in bed approximately six hours after admission

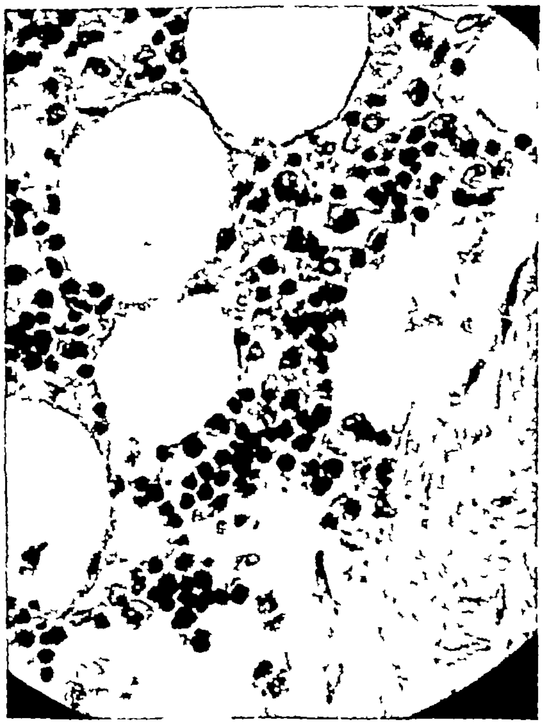
Fig 2—Constituents of bone marrow embolus Hematoxylin-eosin stain (X 600)

Autopsy revealed a poorly developed and poorly nourished elderly white man The fracture of the right wrist was in good position The significant gross findings were moderate generalized arteriosclerosis, moderate cardiac dilatation and hypertrophy (heart weight 470 Gm), pronounced pulmonary edema, and moderate arterial nephrosclerosis Examination of the skull revealed an unsuspected fracture of the right supraorbital ridge and fracture of the right temporal bone There was a small subdural hematoma underlying the fracture sites Externally the brain showed slight diffuse cortical atrophy and congestion The principal histologic findings were limited to the lungs There was decided edema and early bronchopneumonia bilaterally Dilatation and congestion of the pulmonary vessels and interalveolar capillaries were pronounced One of the sections of the left lower lobe included a branch of the pulmonary artery which measured 1 0 mm in diameter The lumen of this vessel was almost completely occluded by a large fragment of bone marrow (fig. 1) This fragment contained mature fat cells immature and mature forms of the erythrocytic and myeloid series, together with several megakaryocytes (fig 2) Two smaller and adjacent branches measuring 0 1 mm in diameter, respectively, contained similar fragments within the lumens (fig 3)

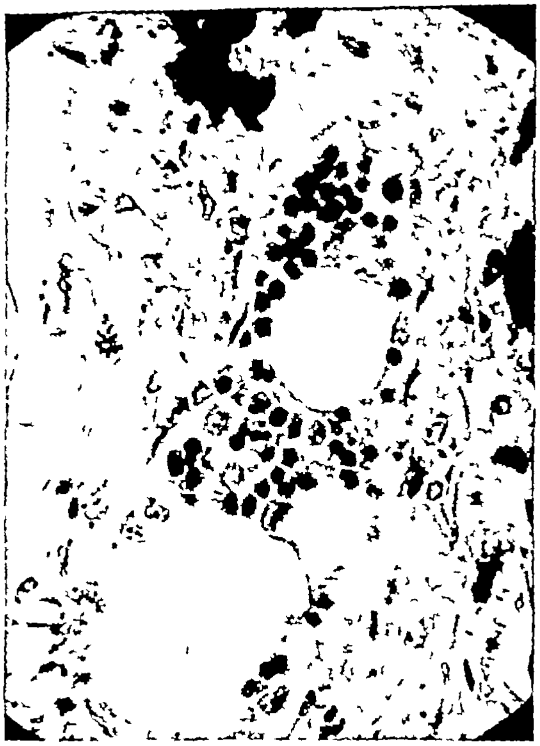
Fig 3—Small branch of pulmonary artery (0 1 mm) from same lung as in figure 1 Hematoxylin-eosin stain (X 600)

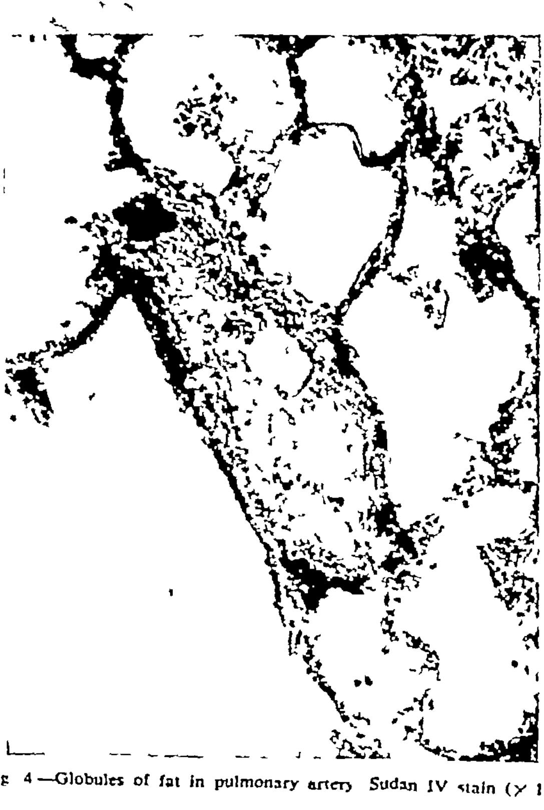
Fig 4—Globules of fat in pulmonary artery Sudan IV stain (X 130)

One of the sections of right lower lobe included another small branch of the pulmonary artery measuring 0 3 mm in diameter which also contained a fragment of bone marrow within the lumen The embolus within the larger vessel was traced by serial sections and was found within the lumen for a distance of approximately 150 μ Multiple frozen sections of both lungs were made and stained with Sudan IV Numerous globules of fat were found within the lumens of many of the pulmonary arteries, and smaller droplets of fat were present within the interalveolar capillaries (fig 4) Similar frozen sections of heart, liver, and kidneys failed to reveal the presence of fat within the arteries and capillaries of these organs

COMMENT

Since there were fractures of the right radius, right temporal bone, and right supraorbital ridge, one cannot with assurance determine the source of the bone marrow and fat embolism The right radius seems the most probable source, even though the fracture involved the distal rather than the proximal portion Since bone marrow emboli were demonstrated in three branches of the pulmonary artery of the left lung and within one branch of the right lung, the process was apparently diffuse and widespread Moreover, massive fat embolism was demonstrated within many of the pulmonary arteries of both lungs The unexpected death was presumably due to widespread fat and bone marrow embolism

SUMMARY

A case of fat and multiple bone marrow embolism of the lungs is reported The patient died unexpectedly after reduction of a fracture of the right radius The cause of death is attributed to widespread fat and bone marrow embolism

ADDENDUM

Since this paper was submitted 27 additional cases of pulmonary bone marrow embolism have been reported by Rappaport, Raum, and Horrell (Bone Marrow Embolism, *Am J Path* **27** 407, 1951)

The Youngstown Hospital Assn (Dr Berkheiser)

CHYLOTHORAX AND CHYLOPERITONEUM

REPORT OF A CASE OCCURRING AFTER EMBOLISM OF LEFT SUBCLAVIAN VEIN WITH THORACIC DUCT OBSTRUCTION

Morton Palken, M D
and
Russell W Weller, M D , Framingham, Mass

Chylous fluid is rarely found within the serous cavities This accumulation of fluid may be caused by obstruction or injury of any portion of the thoracic duct Although the thoracic duct is usually a single structure that empties into the left subclavian vein, it is variable both in structure and venous termination It may consist of multiple trunks in the thorax with cross communications, it may have multiple venous terminations in left or right subclavian, internal or external jugular, innominate, vertebral or azygos veins There may be communications with iliac or lumbar veins, vena cava inferior, or left renal vein

With complete obstruction of the thoracic duct, intraductal pressure increases and distal lymphatics dilate and rupture, producing chylous effusions if no collateral channels exist If obstruction occurs slowly, collaterals may develop sufficiently to prevent chylous effusions

Yater [1] studied 24 cases of thoracic duct obstruction from various causes, only three developed chylous effusions Washburn,[2] in a study of 12 cases of thoracic duct obstruction, found only one with chylous effusion Chylous ascites may occur with or without chylothorax and vice versa, despite high obstruction of the thoracic duct In Yater's series, there is a case of extensive chylothorax and chylopericardium without chylous ascites, caused by obstruction of the veins and thoracic duct in the neck by metastatic carcinoma

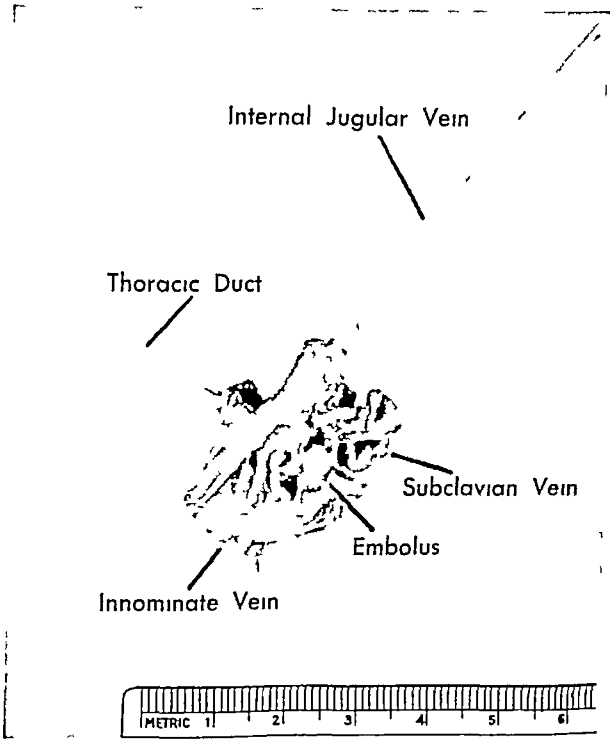

Fig 1 —Photograph of fixed specimen showing thoracic duct, veins and embolus.

The causes of chylous effusion in order of frequency are extrinsic compression or intrinsic occlusion by metastatic neoplasm, tuberculosis, thrombosis of the left subclavian or innominate veins, perforating lymphangitis, filariasis, and effusions secondary to thoracic duct trauma The fluid varies considerably depending on the amount of protein, inflammatory or neoplastic exudate, and lipid content

Few cases of chylous effusion secondary to thrombosis of neck veins are reported, whereas thrombosis of these veins without chylous effusion is relatively common [3] Bauer [4] described the case of a woman aged 41 with pleural and ascitic chylous effusions resulting from thrombosis, of unknown etiology, of the left subclavian and innominate veins In three months, 12,550 ml of chylous fluid was removed from the pleural cavities and 30,050 ml of similar fluid from the peritoneal cavity The thoracic duct was dilated and had three openings into the left subclavian vein, all of which were

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From the Department of Pathology, Cushing Veterans Administration Hospital Drs. Palken and Weller are Residents in Pathology [illegible] Veterans Administration and published with the approval of the Chief Medical Director The statements and conclusions [illegible] are the result of their own study and do not [illegible] the opinion or policy of the Veterans Administration.

occluded by the thrombus Little and others[5] described a case of thrombosis of the left internal jugular vein and probable thrombosis of the left subclavian vein, presumably traumatic in origin, with chylothorax and chyloperitoneum Yater[1] mentioned briefly four somewhat similar cases

REPORT OF A CASE

A man aged 58 was admitted to Cushing Veterans Administration Hospital for the fourth time on April 20, 1950, with a generalized skin rash of four years duration He was first admitted in October, 1946 Skin biopsy was performed at that time and again in January, 1950, both times the diagnosis was mycosis fungoides In December, 1946, he received x ray treatments to the extremities without demonstrable effect He received a course of nitrogen mustard in 1949, resulting in slight temporary regression of skin lesions At the time of his final admission to the hospital, he complained of nausea, vomiting, and abdominal cramps, in addition to the intense pruritus and weeping of the skin

Physical examination revealed an emaciated man with generalized, severe exfoliative dermatitis His pulse rate was 116, respiration 24, temperature 96 F, blood pressure 106/50 There was marked fissuring at the angles of the mouth and the tongue was smooth and red Coarse rales were present in both lungs, with dulness over the right upper lobe posteriorly Examination of the heart elicited negative findings The liver edge was palpable 10 cm below the right costal margin The prostate was moderately enlarged One plus pitting edema of both legs was present The inguinal and axillary lymph nodes were firm and up to 4 cm in diameter

Laboratory studies revealed a hemoglobin value of 12 gm per 100 cc hematocrit 34% leukocyte count 28 000, with 24% segmented neutrophils 4% band neutrophils, 28% lymphocytes, and 44% eosinophils Urine contained 1+ albumin, 4 to 5 erythrocytes and 2 to 3 leukocytes per high power field Sedimentation rate (Wintrobe, corrected) was 0 mm per hour Total serum protein was 4 4 gm per 100 ml, formol gel test negative, and cephalin flocculation test negative The van den Bergh reaction was 0 2 mg per 100 ml direct and 0 7 mg per 100 ml indirect

The patient s condition gradually became worse, although he took fluids including milk freely On April 24, 1950, the patient received 1,000 ml of 5% dextrose in isotonic saline solution and 1 000 ml of 10% dextrose in water into a left antecubital vein At 5 p m on April 25, 1950, nitrogen mustard (methyl bis [beta chlorethyl] amine hydrochloride) 0 2 mg per kilogram of body weight, was injected into a left antecubital vein At 2 15 a m April 26, 1950, the patient was found dead in bed

Autopsy was performed at 9 30 a m April 26 1950 The skin of the entire body was erythematous with extensive desquamation and fissuring The abdomen was slightly distended Firm, discrete lymph nodes up to 4 5 cm in diameter were present in the axillary, inguinal and femoral regions There was 1+ pitting edema of the feet and ankles Three hundred and twenty milliliters of milky fluid were present within the peritoneal cavity The liver edge was 7 cm below the right costal margin Firm lymph nodes up to 2 6 cm in diameter were present in the periaortic region retroperitoneally There were fibrous adhesions at the apex and base of the right lung There was *no* fluid in the left pleural cavity The right pleural cavity contained 50 ml of milky fluid The hilar lymph nodes were firm and up to 3 cm in diameter

The lumbar lymphatic trunks were dilated to 0 2 cm, the cisterna chyli to 1 cm, and the entire thoracic duct from 0 5 cm to 1 cm in diameter The thoracic duct opened by a single orifice into the left subclavian vein posteriorly near its junction with the internal jugular vein Overlying this orifice and slightly adherent to the intimal surface of a valve in the subclavian vein was a smooth reddish gray thrombus 2 cm long and 0 6 cm in diameter No other intrinsic or extrinsic thoracic duct obstruction could be found

Both lungs were congested and edematous The heart was of average size and the coronary arteries were thickened and calcified but patent In the posterior portion of the interventricular septum was a focus of fibrosis 2 cm by 4 cm by 3 cm The aorta was arteriosclerotic, with ulcerations and adherent thrombi in the abdominal portion The spleen, pancreas, and adrenals were not remarkable The liver was large and weighed 3,000 gm Cut section revealed a friable, pale-yellow parenchyma with prominent lobules Kidneys, ureters bladder, and testes were not remarkable The prostate weighed 40 gm and was moderately firm with nodular lateral lobes

Examination of the chylous fluid revealed a specific gravity of *1 010*, total protein 280 mg per 100 ml, a few lymphocytes and occasional neutrophils and fat globules staining orange with Sudan IV

Microscopic examination of tissues revealed small focuses of fibrosis in the myocardium, occasionally infiltrated by eosinophils, lymphocytes, and brown pigment-laden phagocytes The lungs were congested and edematous, with numerous neutrophils and eosinophils present in some bronchi, bronchioles, and surrounding lung alveoli Numerous eosinophils were present in the red pulp of the spleen There was a diffuse fatty infiltration of the liver, with alcoholic hyalin present in liver cells Widened portal zones with proliferation of bile ducts and numerous lymphocytes and eosinophils were noted There was slight nodular hyperplasia of the adrenal cortices Occasional small cortical scars in the kidneys with hyalin intimal thickening of the small arteries were observed Nodular hyperplasia of the prostate gland was present The basement membranes of the testicular tubules were thickened and spermatogenesis was decreased Sections of skin revealed parakeratosis, acanthosis, and, in some sections marked prolongation of rete pegs with thinning of intervening epidermis There were large focal collections of eosinophils, lymphocytes, neutrophils, and large cells with

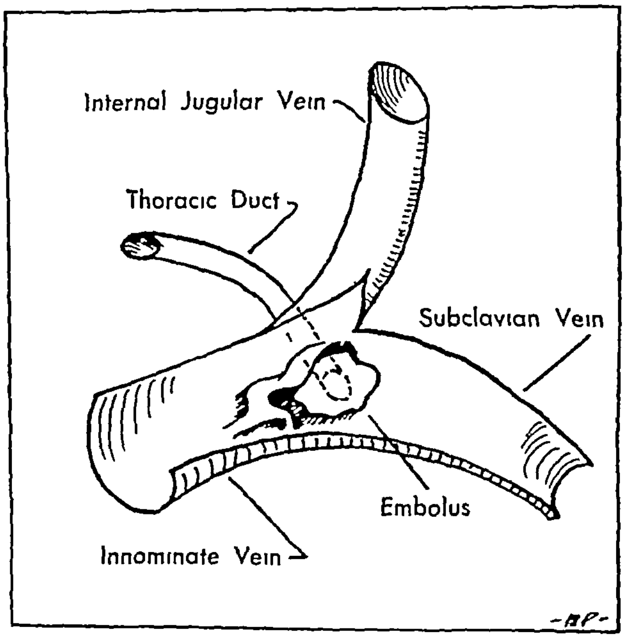

Fig 2 —Schematic representation of Figure 1

basophilic cytoplasm and large multilobated nuclei in the superficial dermis The bone marrow was hyperplastic and the eosinophilic series was predominant The normal architecture of the abdominal lymph nodes was incompletely replaced by a granulomatous process with minimal fibrosis and numerous eosinophils, swollen reticulo-endothelial cells, and large cells with basophilic cytoplasm, multilobated nuclei, and prominent nucleoli The thoracic duct was dilated but otherwise not abnormal Sections through the junction of the thoracic duct and subclavian vein demonstrated a thrombus in the vein consisting of erythrocytes, fibrin, neutrophils, and islands of platelets One side of the thrombus was undergoing early organization On the surface of the thrombus adjacent to the thoracic duct opening were a few fibrin tabs

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[1] Yater W M Non-Traumatic Chylothorax and Chyloperitoneum Review and Report of a Case Due to Carcinomatous Thrombo-Angiitis Obliterans of the Thoracic Duct and Upper Great Veins Ann Int. Med. 9 600 1935

[2] Washburn R N Pathologic Considerations of the Thoracic Duct Am J M Sc 196 572, 1938

[3] Sampson J J An Apparent Causal Mechanism of Primary Thrombosis of the Axillary and Subclavian Veins Am Heart J 25 313 1943 Veal J R. Thrombosis of the Axillary and Subclavian Veins with a Note on the Post Thrombotic Syndrome Am. J M Sc 200:27 1940 Sampson J J An Apparent Causal Mechanism of Primary Thrombosis of the Axillary and Subclavian Veins In Medico-Surgical Tributes to Harold Brunn Berkeley University of California Press 1942

[4] Bauer J T A Case of Chylothorax and Chyloperitoneum [illegible] Review of Lesions of the Thoracic Duct, Bull Ayer [illegible] Pennsylvania Hosp 3 493 1946

[5] Little J [illegible] Harrison C and Blalock [illegible] Chyloperitoneum Effects of [illegible] of [illegible] 11 392 1942.

On the basis of the findings at autopsy, the diagnosis was chylous ascites and right chylothorax, dilatation of thoracic duct, Hodgkin s disease of skin, granuloma type (mycosis fungoides), with metastases to abdominal lymph nodes, arteriosclerosis of coronary arteries and aorta, focal fibrosis of myocardium bronchopneumonia, edema and congestion of lungs, fibrous pleuritis, eosinophilic hyperplasia of bone marrow, portal cirrhosis, arterionephrosclerosis, hyperplasia of prostate, and nodular hyperplasia of adrenal cortex

The immediate cause of death was severe inanition caused by widespread involvement of the skin by Hodgkin s granuloma (mycosis fungoides)

COMMENT

The presence of chylous fluid in the right pleural and peritoneal cavities of a patient with Hodgkin's disease of the skin prompted a careful examination of the entire thoracic duct The duct was demonstrated to be a single trunk, markedly dilated up to its termination, where an embolus occluded its opening into the left subclavian vein

The evolution of this embolus may be explained as follows As a result of intravenous therapy, thrombosis of the antecubital veins occurred A subsequent injection into one of these veins dislodged a thrombus, which lodged as an embolus caught by the subclavian valve overlying the opening of the thoracic duct The presence of early fibroblastic organization at the periphery of the thrombus, and the absence of any fibrous attachment to the subclavian vein, support this explanation

SUMMARY

A report of a case of Hodgkin's disease of the skin, with the unusual finding of an embolus in the left subclavian vein obstructing the orifice of the thoracic duct and resulting in chylous ascites and chylothorax, is presented

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Medical Education —The most important element in medical education *is theory, not practice* All practice—even driving a nail—is based upon some sort of theory, however nebulous Given good theory any reasonably adept person can be taught good practice, but without sound theory practice is misdirected and may become positively dangerous That is not to deny that good theory can come from practice The bedside *is the clinician s* laboratory and provides in addition the ultimate test for any medical theory A tremendous amount of valuable observation has been gained from that source But while it remains only observation *it is still purely empirical* Before such facts can be woven into fruitful scientific theory they must be sorted in various combinations, checked experimentally against working hypotheses in the laboratory, and finally verified at the bedside once again under properly controlled conditions —A A *Abbie*, M D , The Academic Aspect of Medical Education, *Medical Journal of Australia* June 1951

AIR EMBOLISM IN PNEUMOPERITONEUM

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Air embolism is a dramatic and often catastrophic complication of pneumoperitoneum It follows the entrance of large quantities of air into the pulmonary venous system through a systemic vein Fortunately, its incidence is rare, but it occurs more frequently than the occasional report in the literature would seem to indicate [1] The growing popularity of pneumoperitoneum in the treatment of pulmonary tuberculosis and its ease of administration seem certain to increase the frequency with which an embolism is met by the general practitioner as well as the phthisiologist

The purpose of this report is to add three more cases of air embolism to the literature and stress the clinical application of the observations of Durant [2] and his coworkers, who have provided a simple effective method for coping with this emergency

REPORT OF CASES

CASE 1 —C A P , a white man aged 24, was discovered to have pulmonary tuberculosis in 1944 A right phreniclasia and pneumoperitoneum were induced in January, 1947 but, soon after, he left the hospital against advice and abandoned this procedure He was readmitted to the hospital in September, 1947, and because of the presence of bilateral cavitary disease with positive sputum, it was decided to reinstitute his pneumoperitoneum Under local anesthesia and using a closed technique with three way stopcock and syringe, a 19 gauge blunt needle was easily inserted into the right upper quadrant of the abdomen No blood was obtained on manipulation of the syringe and 300 cc of air was given slowly and without incident, when suddenly the patient became very excited and tried to jump off the table The needle was promptly withdrawn and the patient restrained Acute cardiac collapse—marked pallor tachycardia, tachypnea, and profuse perspiration—developed, and he kept screaming that he was dying He was *incontinent of urine and feces*, and a left hemiplegia developed He was given sedation and maintained in the head down position, and he soon quieted down Within four hours he had regained some use of his left arm and leg The next morning with the exception of inability to control fine movements of his fingers and some diminution in sensorium on the left, he had completely recovered Within 48 hr he was entirely normal When examined recently (June 1950) he had shown no sequelae It might be noted that though his left pupil was dilated and fixed to light during the acute stage *his fundi* were normal, and no air bubbles were seen in the retinal vessels.

CASE 2 —In T L a white man aged 56, pernicious anemia developed in 1929 and pulmonary tuberculosis *in* 1945 He was hospitalized for his tuberculosis in 1946, and pneumoperitoneum was instituted in March, 1947 He required 800 to 1,000 cc of air at weekly intervals to maintain a pressure of + 7 to + 12 with adequate rise of the diaphragm On Dec 16 1948 under local anesthesia and using a closed system with three way stopcock and syringe a 19 gauge needle was introduced into the peritoneal cavity Drawing back on the syringe revealed a free air space,

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Reviewed in the Veterans Administration and published with the approval of the Chief *Medical Director* The statements and conclusions published by the author *do not necessarily* reflect the opinion or policy of the Veterans Administration

[1] Trimble H G and Wardrip B H *Pneumoperitoneum* in Treatment of Pulmonary Tuberculosis Am *Rev Tuberc* **30** 111 1937 Warring F C Jr and Thomas R. M Spontaneous Air Embolism Am Rev Tuberc **42** 682 1940 Rilance A B and Warring F C *Jr* Pneumoperitoneum Supplementing *Phrenic Paralysis* Am Rev Tuberc **44**:323 1941

[2] *Durant T M Long J* and *Oppenheimer* M J Pulmonary (Venous) Air Embolism Am Heart *J* **33** 269 1947

and the manometer registered + 7 One thousand cubic centimeters (1 000 cc) of air was given, a final reading of + 12 obtained and the needle withdrawn The patient got off the table, walked across the room and, as he started to put on his bathrobe, fell unconscious to the floor In spite of the absence of pulse and respiration when examined by another physician in the room at the time artificial respiration, oxygen and cardiac stimulants were given but the patient was dead Autopsy revealed a small hemorrhage subperitoneally and in the abdominal musculature, with a large amount of air separating the layers of muscle tissue This extended over an area 6 cm in diameter surrounding a perforated vein The right auricle and right ventricle contained a large amount of air and a small amount of blood These were mixed and frothy in character The pulmonary artery and its two branches contained air and frothy blood, as demonstrated by inserting a needle into these vessels and obtaining a sample of their contents before the heart or great vessels were opened

CASE 3 —C E B, a white man aged 26, was first discovered to have pulmonary tuberculosis in 1945 A left pneumothorax was begun in November, 1946 and discontinued in August, 1947, because it was ineffective Pneumoperitoneum was started on Dec 8, 1947, and continued with 1,000 cc of air being given at weekly intervals with the maintenance of a pressure of + 8 to + 10 He had a succession of irregular discharges and was admitted to this hospital for the third time on Aug 13, 1948 He had not taken his treatment regularly while at home, and fluoroscopy revealed only a small pocket of air under the right diaphragm On Aug 24 1948 pneumoperitoneum was done Under procaine hydrochloride (novocaine®) anesthesia, and using a closed system, a 19 gauge needle was inserted into the right upper quadrant Manipulation of the syringe revealed a free air pocket and a reading of + 2 to + 4 was obtained One hundred cubic centimeters of air was given with little change in pressure reading A second hundred was allowed to run in with a pressure of + 8 After the administration of 50 cc more, the patient coughed and attempted to sit up The needle was promptly withdrawn Almost immediately he became apneic and intensely cyanotic and had incontinence of urine and generalized clonic contractures of all extremities He was immediately placed in the left lateral position His pulse became stronger, respirations returned, and cyanosis disappeared within five minutes Oxygen was administered but within 15 min the patient had recovered sufficiently to be returned to his ward Neurologically, he had weakness of the left arm and leg which cleared completely within eight hours Recent examination (June, 1950) revealed no sequelae

COMMENT

Air embolism as it is usually encountered in pneumoperitoneum occurs as a result of the entrance of massive quantities of air into a systemic vein, transported to the right heart where it produces an acute obstruction to the outflow tract of the right ventricle Experimentally, Durant[2] and his co-workers have shown that this is a mechanical obstruction and can be relieved by placing the patient on his left side In this position the outflow tract lies inferiorly to the body of the right ventricle and the air trap disappears The air is churned into froth, mixed with the blood, and transported to the lungs, where excretion occurs This procedure is frequently effective even when the patient appears moribund It must be remembered that a large quantity of air is necessary to produce this condition, and it may take considerable time before all the air is excreted The patient should be kept in the left lateral position until it has been determined that the obstruction is completely relieved Occasionally this may take several hours with recurrence of symptoms when the patient is returned to the decubitus position[3] The use of oxygen and cardiac stimulants are of little value unless the mechanical block is relieved promptly

It should be noted that it is standard practice in this hospital to use the head-down (modified Trendelenburg) position and a closed system in administering pneumoperitoneum as prophylactic measures to prevent this complication Nevertheless air embolism was encountered three times in the past three years during which approximately 3,000 treatments were given Two of these were definitely venous while the third might have been arterial

SUMMARY

Air embolism as a complication of pneumoperitoneum occurs more frequently than the literature would seem to indicate

Three cases, one fatal, exhibiting this syndrome have been described

The effectiveness of the left lateral position in the treatment of this condition is stressed

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[3] Abbott, O A Personal communication to the author

UVEOPAROTID FEVER

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Uveoparotid fever is a chronic inflammatory disease of the uveal tract of the eye with enlargement of the parotid glands, often running a febrile course, and frequently complicated by paralysis of the facial nerve[1] The condition was first described by Heerfordt in 1909[2] An extensive review and an analysis of 47 cases was presented by Garland and Thompson in 1933[3] These authors were so convinced of the tuberculous etiology of the disease that they proposed the name uveoparotid tuberculosis, particularly in view of the fact that only half their cases ran a febrile course They based their assumption on a few recorded necropsies, on results of guinea pig inoculations, on a frequently found family history of tuberculosis, and on favorable results of tuberculin therapy

In 1936, Bruins Slot[4] first suggested that, because of the similar pathological picture and occasional coexistence of Boeck's sarcoidosis and Heerfordt's syndrome, uveoparotid fever is merely another form of sarcoidosis A number of cases of sarcoidosis with uveoparotid fever have since been reported, chiefly in the ophthalmological literature[5]

An additional such case is here presented, not only because of the relative rarity of the disease, but also because of the importance of keeping sarcoidosis in mind if confronted with failing vision and uveitis

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From the Medical Department Cook County Hospital

[1] Taylor F R in Oxford Medicine edited by H A Christian New York Oxford University Press 1949 Vol 5 p 1086

[2] Heerfordt C F Arch f Ophth 70 254 1909

[3] Garland H G and Thomson J G Quart J Med 2 157 1933

[4] Bruins Slot, W J Nederl tijdschr v geneesk 80 2859 1936

[5] Osterberg G Brit. J Ophth 23 145 1939 Walsh F B Arch Ophth 21 421 (Jan) 1939 King M J Tr Am Ophth Soc 37 422 1939 Lindau A. and Lowegren A Acta med Scandinav 105:242 1940 Schultz, A Am. J Ophth 28 1010 1945

REPORT OF A CASE

Mrs D C, a 33-year-old Negro woman, was admitted to the medical department of the Cook County Hospital September 3, 1950 For the past six months she had noticed a gradual failing of her vision, so that reading or fine house work had become increasingly difficult For the past four weeks symptoms of a 'chest cold" were present with a tight feeling around the chest, an unproductive cough, and some shortness of breath, particularly on exertion In addition general weakness, anorexia, and increasing exhaustion with lassitude and lack of energy induced her to seek hospital admission The past history revealed three attacks of pneumonia, the last one in 1945 requiring hospitalization The family history disclosed close contact to tuberculosis, with the mother succumbing to this disease in 1938

The physical examination revealed a poorly nourished Negro woman, apparently chronically ill and looking much older than the stated age The blood pressure was 118 systolic and 72 diastolic, the pulse rate was 80, and the respiratory rate 18 Significant findings were a slight bilateral conjunctival and pharyngeal injection and a generalized multiple moderate lymph adenopathy involving both the lateral and posterior cervical and axillary glands The chest appeared normal to percussion and auscultation The heart was not enlarged, the rhythm was regular, and the sounds were clear The abdominal findings were not remarkable On the extensor surfaces of both legs a reddish purple maculopapular eruption was noted The deep and superficial reflexes were present and there was no gross evidence of any neurological abnormality

Laboratory findings disclosed a normal urine a hemoglobin value of 73%, a blood cell count of 4 490,000 erythrocytes, 5,930 leucocytes, with a differential count of 58% neutrophils, 21% lyphocytes 13% monocytes and 4% eosinophils The Kahn test was negative The blood value for the nonprotein nitrogen was 28 mg per 100 cc, the total protein was 7 gm per 100 cc, with an albumin fraction of 4 2 gm per 100 cc and a globulin of 2 8 gm per 100 cc The blood chlorides were 100 mEq a liter, the sodium, 135 mEq a liter the icteric index, 5 units, and the value for diastase, 8 units An x ray of the chest showed the heart to be normal in size Considerable bilateral hilar adenopathy with parahilar streaky extension was noted Views of the paranasal sinuses failed to demonstrate abnormalities X-rays of hands and skull likewise revealed normal structures A dermal tuberculin test with old tuberculin 1 1000 failed to elicit any reaction

Course—There was a low grade fever not exceeding 100 2 F orally The patient was treated symptomatically without significant improvement On the seventh hospital day a rapidly increasing swelling involving both parotid glands and extending into the retromandibular and submaxillary areas developed in the patient There was mild tenderness over the affected region, and a definite nodularity could be felt The consultant in contagious diseases considered these findings as secondary to the systemic disease and not due to epidemic parotitis Meanwhile, the consultant opthalmologist had completed his examination and reported his findings as granulomatous iridocyclitis compatible with Boeck's sarcoidosis The dermatological consultant regarded the manculopapular skin eruption of the legs as compatible with sarcoidosis A biopsy of the parotid gland was suggested, but permission was refused by the patient

The patient s condition remained unchanged without further progression of the involved areas until September 21, when she signed her release and, despite advice to the contrary, left the hospital

COMMENT

There is little doubt that our case fulfilled all the criteria of uveoparotid fever as manifested by uvetitis, bilateral parotitis, and a low-grade fever Additional evidence of Boeck's sarcoidosis was present in form of a generalized and marked mediastinal lymphadenopathy There was a skin eruption suggesting sarcoidosis, there was a negative dermal tuberculin reaction so frequently encountered in sarcoidosis, and there was a history of exposure to tuberculosis There was no involvement of the osseous system and no hyperglobulinemia

Our case was remarkable in that failing vision preceded other symptoms by many months In fact, it was only after hospital admission that the parotitis suddenly made its appearance and suggested the possibility of uveoparotid fever That ocular symptoms can precede other manifestations of uveoparotid fever and sarcoidosis is also apparent in the case reported by Kirby and Armstrong[6] It would seem reasonable to assume that the true nature of an obscure uveitis with failing vision might be disclosed by a thorough and systematic search for evidence of sarcoidosis In view of the recent advancements in the treatment of tuberculosis, the early diagnosis of sarcoid uveitis may have added significance in future therapeutic endeavours It is readily admitted that the old controversial question of whether Boeck's sarcoidosis is a disease per se, or a special form of tuberculosis has not been settled Recent findings demonstrating a tuberculin neutralizing factor in the serum of patients with sarcoidosis[7] may be considered additional evidence for a definite though obscure relationship of this disease to tuberculosis

SUMMARY AND CONCLUSIONS

A case of Heerfordt's uveoparotid fever is presented Failing vision due to sarcoid uveitis preceded by many months other manifestations of uveoparotid fever and sarcoidosis A thorough search for eveidence of sarcoidosis is suggested in any case of obscure uveitis

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[6] Kirby W M M, and Armstrong C D Ann Int Med 21 475 1944

[7] Wells A Q and Wylie J A H Lancet 1 439 1949

DETERMINATION OF VENOUS PRESSURE WITHIN ESOPHAGEAL VARICES

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A knowledge of the pressure within esophageal varices may be important in evaluating the success of short-circuiting operations for portal hypertension The theoretical and practical implications of such information are quite obvious, particularly as they apply to immediate estimations of the patency of the shunt, possible sources of hemorrhage continued in the postoperative period, and slight changes in the postoperative portal pressure with the passage of time

Measurements of the pressure may be made during esophagoscopy with the simple equipment used for the sclerosing treatment of esophageal varices—esophagoscope and injecting needle—plus a water manometer such as that used in determining spinal fluid pressure But as simple as is the equipment, the technique is very difficult, and one is often hard put to judge the validity of the readings obtained One of the two main difficulties is that of accomplishing the procedure without exerting pressure on the more proximal segment of the varix with the end of the esophagoscope, thus increasing the pressure within the vein The other difficulty involves the

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obtaining of readings at a time when the patient's thorax is at complete rest in partial expiration, so that a Valsalva or reversed Valsalva effect does not falsely influence the intravenous pressure

Intravariceal pressures have been measured on 14 occasions in six patients, usually just prior to injection therapy The readings obtained on 12 occasions had to be discarded because there was uncertainty as to whether the needle had been in proper position or whether there had been pressure exerted on the proximal portion of the varix The Eder-Hufford esophagoscope and the Eder injecting needle (21 gauge with 2 5 mm shaft) were used From the point of the needle to the base of the manometer the length of the apparatus measured 65 cm Isotonic saline solution was used as the counterbalancing medium, in a system which was, of course, open

REPORT OF CASES

Case 1 —A 28 year old man was hospitalized because of sudden massive hematemesis The diagnosis of Banti s disease was made, the clinical studies showing among other things, large esophageal varices and normal liver The spleen was removed and an end to side spleno renal shunt made The venous pressure in a mesenteric vein was 310 mm of saline solution prior to construction of the shunt, and 110 mm at the completion of the operation Postoperatively the patient did well an esophagogram failed to demonstrate varices and two intravenous pyelograms showed the left kidney to be normal The patient was returned to full military duty Five and a half months after the operation, minor hematemesis led to rehospitalization, and 10 days later there was another brief but serious hemorrhage Complete gastrointestinal x-ray studies and gastroscopy gave no evidence of a bleeding source but esophagoscopy showed minor, probably inconsequential, varices just above the cardia An intravenous pyelogram again indicated normal function in the left kidney, suggesting adequate renal venous flow It was felt that the vascular anastomosis was probably still patent An unrelated circumstance precluded attempts to confirm the matter by postprandial comparisons of blood sugar levels drawn from the antecubital vein and, by catheter from the vena cava at the level of the left renal vein In view of the fact that the varices were the only demonstrable potential bleeding source, sclerosing therapy was considered Prior to the first treatment, however, the pressure within one of the varices was measured, under esophagoscopic conditions which were felt to give valid readings Two determinations showed pressures of 125 and 110 mm It was felt that these readings proved the patency of the spleno-renal shunt, and that the varices should be considered merely subclinical remnants of the previous portal hypertension

Case 2 —A 43 year old white man had first been studied three years previously because of hematemesis At that time he was found to have advanced Laennec s cirrhosis with esophageal varices Hemorrhage continued at intervals during the next three years, and he was then hospitalized for operation A portacaval shunt was made Immediately after the operation, esophagograms failed to reveal the previously demonstrated varices, but esophagoscopy and gastroscopy showed, as they had prior to operation, rather large varices in both organs There was however, no further bleeding At esophagoscopy six weeks after operation the venous pressure readings made under conditions felt to be satisfactory for valid determinations were 135 and 135 mm Such a pressure level was felt to indicate that the operation had accomplished the desired effect—an effect which could not be appraised by mere visualization of the varices

CONCLUSION

Measurement of the pressure within esophageal varices by means of a needle introduced by way of the esophagoscope may give information, not obtainable by other means, useful in the evaluation of the success of portal-shunt operations

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

The Council has authorized the publication of the following report from the Committee on Pesticides

Robert T Stormont, M D, *Secretary*

The following article is the third in a series on aspects of pesticides of immediate medical interest The Committee wishes to acknowledge the assistance of the following persons who reviewed the manuscript Dr J M Barnes Secretary, Toxicity Committee Medical Research Council, England Dr M J Dallemagne, University of Liege Belgium Dr Edward A Doisy Jr, St Louis University Dr Francis F Heyroth, University of Cincinnati Dr Edward F Knipling United States Department of Agriculture Washington D C and Dr Bernard P McNamara, Army Chemical Center Maryland

Bernard E Conley, *Secretary*
Committee on Pesticides

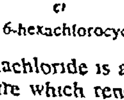
TOXIC EFFECTS OF TECHNICAL BENZENE HEXACHLORIDE AND ITS PRINCIPAL ISOMERS

Benzene hexachloride is one of the newer synthetic insecticidal agents used in the control of insects of economic and public health importance Like DDT, it has been known as a chemical entity for many years but needed the stimulus of entomologic research to bring it out of laboratory obscurity It was first synthesized by the photochlorination of benzene by Michael Faraday in 1825 The insecticidal properties of the crude chlorination product were discovered independently, almost simultaneously, in France and England at the beginning of the last decade Different samples of the crude chemical gave varying results in early trials and investigations were directed toward uncovering the insecticidal fraction of the product Additional studies in England in early 1943 showed that greatest activity resided in the gamma isomer which composed 10 to 35% of the technical mixture The association of this isomer with insecticidal activity fostered further research on the improvement of technical preparations of benzene hexachloride which has culminated in the commercial production of essentially pure (99%) gamma benzene hexachloride, now widely known as lindane

Although incorrect chemically, the name benzene hexachloride and its abbreviation, BHC, have been generally accepted as common designations for commercial mixtures of the stereoisomers of 1, 2 3, 4, 5, 6 hexachlorocyclohexane Five isomers have been isolated of which the gamma isomer is of greatest entomologic and medical interest Lindane is the coined, common name for essentially pure grades of this isomer which are used for agricultural and related purposes The generic name, gamma benzene hexachloride, has been adopted by the Council on Pharmacy and Chemistry for this constituent as used in medicinal preparations

In the pure state, the isomers of benzene hexachloride are well defined white crystals which are without pronounced odor but possess a bitter taste Technical or commercial benzene hexachloride is a cream-colored, crystalline compound which is distinguished by a persistent and penetrating musty odor that varies somewhat with the method of manufacture

The structural formula may be represented as follows



1,2,3 4,5 6-hexachlorocyclohexane

Technical benzene hexachloride is a relatively stable preparation with a vapor pressure which renders it sufficiently volatile to enable it to act as a *fumigant*, although reducing its residual effectiveness in comparison with DDT It exhibits the same instability to alkalis as DDT, but it is more stable than the latter in the presence of metals and their salts The crude mixture is insoluble in water but its solubility in organic solvents varies with the nature and concentration of the several isomers and the impurities present. Technical benzene hexachloride and lindane may be used in dusts, in wettable powders, in solutions of organic solvents, and as a constituent of paints. The technical product and, to a lesser extent, lindane, produce off flavor in several types of agricultural crops and in some processed foods during storage, thus limiting their use. Other uses are limited by its objectionable odor, especially that associated with technical benzene hexachloride. Because of these factors and the relative lack of insecticidal effectiveness in its constituents other than the gamma fraction, technical benzene hexachloride of a higher gamma content and insecticide preparations of lindane are being produced.

PHARMACOLOGY

The pharmacology of technical benzene hexachloride and its principal isomers has been as intensively investigated as any chlorinated hydrocarbon insecticide, with the possible exception of DDT. Nevertheless, much remains to be learned concerning the biologic complexities of the metabolism and pharmacologic actions of the technical mixture and its several constituents. Comparatively little is known about the detoxification mechanisms and the influence of nutrition and environment on the susceptibility or resistance of various animal species to poisoning from these compounds. Even less is known about the effects of technical benzene hexachloride or its various components on enzyme systems in animal organisms. These and other deficiencies in basic knowledge are common to the chlorinated hydrocarbon insecticides and a number of drug and drug like materials in common use. Unfortunately, the lack of such information precludes precise statements about many aspects of the metabolism of and susceptibility to technical benzene hexachloride and lindane.

Action.—Animal studies indicate that technical benzene hexachloride acts as a stimulant to the central nervous system and produces hyperirritability, lack of muscular coordination, convulsions and death. That the different isomers of technical benzene hexachloride vary in their pharmacologic action is most evident in the antagonism between the gamma and delta isomers when separately or successively administered intravenously. The gamma isomer is a strong excitant of the central nervous system and produces acute responses in animals generally similar to those induced by the technical product. The delta isomer is a depressant of the central nervous system tending to antagonize the stimulating effects of the gamma isomer. The alpha and beta compounds are more intermediate in their action. The alpha isomer predisposes to an initial state of hyperexcitability which is followed by depression, and the beta constituent provokes tremors and then depression of the central nervous system on prolonged administration.

The gamma isomer also acts more rapidly than technical benzene hexachloride, eliciting responses in laboratory animals which may continue for 24 hours within 30 minutes after ingestion. Technical benzene hexachloride acts more slowly. Evidence of stimulation does not appear until one or two hours after ingestion and then may persist for as long as four days. The alpha isomer, which constitutes 50 to 70% of the technical preparation, may contribute to this delayed effect since stimulatory effects under the above conditions do not appear for 24 to 48 hours. Death of the animal may then be deferred for four or five days.

Metabolism.—Technical benzene hexachloride may be absorbed into an animal's body by way of the gastrointestinal tract, the respiratory tract, and from the skin. The rate and extent of absorption through these avenues of entrance varies depending on the physical properties of the insecticide formulations and the physiologic characteristics of the tissues involved. Absorption of the technical mixture from the alimentary tract is not readily accomplished. The presence of fat or other lipoids facilitates penetration of the intestinal barrier. Cutaneous absorption of the material from oil solutions has been firmly established. Absorption of dusts from the skin of animals is known to occur, but less is known about absorption from the respiratory tract. Physicochemical factors such as the size of particulate matter in dusts, fogs, mists and smoke concentrations, the duration of exposure to vapor, and the presence of absorbable vehicles in the formulation influence the ease and extent to which dangerous amounts of technical benzene hexachloride or lindane may be admitted to the body by this route.

On entrance into the animal body, technical benzene hexachloride is distributed to the various organs and tissues. It has been found in the blood, liver, spleen, adrenal glands, muscle tissues, brain, kidney, and fat of treated animals. Storage is greatest in fat tissues although it is also deposited in significant amounts in the liver and kidneys. The distribution and extent of storage of the several isomers in various organs varies with individual isomers and, perhaps to some degree, with the species of animal exposed.

Striking differences in fat storage of the various isomers of technical benzene hexachloride have been reported. Maximum storage of the isomers is accomplished in about six weeks, and the greatest accumulation occurs with the beta isomer, which is also stored the longest. The concentration of the alpha isomer built up by tissue lipids is twice that which is contained in the whole diet. The beta isomer is concentrated to 10 times the dietary concentration, and the gamma and delta isomers are deposited at the same concentration as contained in the diet. Emulsifiers in the formulation increase absorption, thereby enhancing storage of the isomers. Animal studies indicate that storage is higher in females than in males. Young animals have also been found to store more benzene hexachloride than older animals. The significance of these findings lies in the direct correlation between the storage of the several isomers in fat tissue and their ability to cause chronic poisoning.

Gamma benzene hexachloride is eliminated in the urine, in the feces, and in the milk of lactating animals. In rats on a diet of 100 and 500 PPM of the gamma isomer it is rapidly eliminated and completely disappears from the body within one to two weeks. A maximum amount is excreted in the milk in approximately 24 hours after feeding is stopped. The alpha isomer is rapidly mobilized from the fat, disappearing in about four weeks, and the delta fraction is excreted at about the same rate as the gamma. In contrast the beta compound requires an estimated three to six months for complete removal from the body following cessation of exposure to the toxicant. The significance of the mere presence of the isomers in fat tissue is unknown. Damage may occur, however, when these agents come into contact with other tissues during transport to and from the fat. It can be especially serious when such tissues have experienced previous injury since it may lead to further impairment of function, a complication common to most chlorinated hydrocarbon compounds and the basis for present concern about the long term implications of cumulative chemicals of this nature.

Little is known about the metabolic fate of technical benzene hexachloride or its constituents. In vitro tests suggest that the gamma isomer is at least partially destroyed in the liver. A material giving an ultraviolet absorption curve similar to that for 1,2,4 trichlorobenzene was found in the neutral and acidic fractions of urine of laboratory animals receiving the alpha isomer. Further tests for this intermediate were inconclusive and led to the suspicion that alpha benzene hexachloride has a highly variable metabolism. In vivo studies indicate that stereochemical changes in the tissues involving the transformation of the other isomers to the more acutely toxic gamma isomer do not occur. Little information is available on the influence of benzene hexachloride or its components on enzyme systems.

Since consistent findings are lacking only the broadest generalities concerning susceptibility of various animal species to technical benzene hexachloride and lindane are possible. Available evidence points to the general conclusion that dogs and rabbits may be the mammals most susceptible to gamma benzene hexachloride, followed by mice, rats, guinea pigs and the larger domesticated animals. Diet and sex appear to be secondary to the age and the absorptive capacity of the animals. Young calves are much more susceptible than adults of the species. Wide variations occurring even among individuals in a given species emphasize the dominant role the absorption mechanism plays in susceptibility. Tolerance to progressively increased concentrations of benzene hexachloride or the gamma isomer has not been observed.

TOXICOLOGY

Technical benzene hexachloride is about equal to DDT in acute toxicity to man and other warm blooded animals. The gamma isomer is the most toxic fraction of the technical mix ture It is about twice as toxic as DDT, and the alpha, delta, and beta constituents have been estimated to be approximately one half one fourth and one twenty fourth as poisonous respectively The other known isomers are present in the technical mixture in such small amounts that they do not contribute significantly to the chronic toxicity of technical benzene hexachloride which is about one half that of DDT In the technical mixtures the beta isomer plays the most important role in chronic intoxication since it is stored in the fat tissue longer than the other isomers and since being the most chemically stable in the body it is the least readily destroyed On a similar comparative basis the gamma isomer is thought to be about one-quarter as poisonous because of its minimal storage rapid elimination and decreased disposition to tissue damage

Oral Toxicity —When technical benzene hexachloride is administered orally, it is of a relatively low order of acute toxicity A wide range of dosage may prove toxic or fatal because of the varying amounts of the several isomers which may appear in technical mixtures It has been estimated that approximately 600 mg /kg or about an ounce of technical benzene hexachloride containing 15% gamma isomer could be fatal in a single dose for an adult The estimated single, oral fatal dose for lindane is less than one-quarter this amount These estimates have not been completely confirmed by human experience although a case noted elsewhere in this report describing an attempted suicide suggests that these are reasonable approximations of the amounts which could be fatal for adult human beings

The chronic oral toxicity of essentially pure gamma formulations is not as great as that of the technical product because of the absence of the beta isomer Liver degeneration and nutritional disturbances however, have been induced in dogs exposed to the gamma isomer over long periods of time Nevertheless, the likelihood of cumulative effects is not as great because of the fairly rapid loss of this constituent from fat depots

Cutaneous Toxicity —Technical benzene hexachloride is a moderate skin irritant without demonstrated sensitizing properties Irritating effects to the eyes, skin and mucosa are principally attributable to the delta isomer and may be elicited by both dry forms and solutions of the technical preparation Irritation of the skin is most noticeable when perspiration is present and application of water to the affected areas has been found to increase the stinging sensation Systemic toxic reactions from skin contact with dry formulations of technical benzene hexachloride are fairly remote because of the poor absorption of the compound in this form The danger of absorption is increased with prolonged handling of powders and dusts because of the possibility of small particles penetrating the integument Prolonged frictional contact of the skin with technical benzene hexachloride impregnated cloth may cause systemic toxic reactions if the chemical is present in sufficient quantities Animal experiments indicate that the amounts of gamma isomer which could be used safely to impregnate clothing would be too small to be advantageous for this purpose

Cutaneous absorption of both oily and aqueous suspensions of gamma benzene hexachloride has resulted in fatalities in laboratory animals Death among cattle from dips and sprays of both lindane and the technical material has also been reported Solutions of either the gamma or the technical mixture in lipoid and other organic solvents are readily absorbed and offer the greatest danger The high dermal toxicity of the gamma isomer in lipoid solvents is especially noteworthy In solution with kerosene or other solvents of a similar nature it penetrates the skin rapidly The lethal dose for rabbits by a single cutaneous exposure has been reported to be similar to that for nicotine

Since the gamma isomer offers skin hazards in the presence of lipoid material its use in an ointment for scabies is recommended only under medical supervision It may be used safely in 1.0% concentrations if prolonged or repeated applications are avoided and if precautions are taken to prevent contact with the eyes or other sensitive areas about the face The presence of secondary infection does not interfere with this medicinal use

Inhalation Toxicity —Little precise information has been recorded in the medical literature on the inhalation effects of benzene hexachloride Signs of illness were not observed in experimental animals exposed to the vapors of the gamma isomer for several months In a six months experiment with exposure to dusts of benzene hexachloride, liver and kidney damage in one of ten mice and questionable damage in a chicken were noted Initial pneumonitis and pulmonary granulomas observed in the remaining animals appeared to be foreign body reactions to the clay used in the dust In a second experiment five mice were exposed for one hour to an atmosphere containing 10 mg per liter of technical benzene hexachloride One mouse died in two days, the remaining animals had brief spasms but recovered in two days These studies suggest that the vapor and dust hazards from the technical compound may be of a low order nevertheless the customary precautions against prolonged or excessive inhalation of vapors or dusts should be observed and more care should be taken when oil base sprays are used

Pathology —Benzene hexachloride gives a pathologic picture resembling that of DDT, with liver damage the most prominent feature The beta isomer is mainly responsible for liver necrosis although the gamma isomer alone has caused such injury A moderate degree of hyaline granular degeneration of the renal convoluted tubular epithelium as well as mild changes in the bone marrow, lymphoid tissues adrenal cortex, and cerebrum, have been observed in animals poisoned by the technical mixtures of the isomers Considered anatomically, these lesions have not always been sufficient to cause death The alpha isomer produces the same type of liver and renal damage as the gamma isomer and general emaciation atrophy of various tissues, and lesser injury to other viscera also have been noticed

The pathologic findings in acute fatal gamma poisoning have not always been characteristic in animals There is a marked distention of the stomach and intestines with gas and fluid and, in several fatalities in large animals rupture of the stomach has been an unexplained finding Congested edematous lungs dark fluid blood distended liver of black or bluish color with patches of necrosis, contracted dark spleen and a pale soft brain mottled with pin point hemorrhages have also been found

Symptoms—The symptoms which may be expected in acute poisoning from technical benzene hexachloride are excitation, clonic tonic convulsions followed by hyperirritability to external stimuli and finally depression Intoxication from benzene hexachloride of high gamma content or from the gamma isomer alone is manifested by restlessness micturition, intermittent muscular spasm loss of equilibrium convulsions, and then collapse and death The potassium level of the blood may increase, but the calcium concentration remains the same The course of symptoms depends largely on the proportion of the isomers in the technical compound the onset and severity being in direct proportion to the amount of gamma isomer which is present The immediate cause of death is functional disturbances of the central nervous system, and especially of the respiratory center

Chronic symptoms are predominantly those of nervousness and lack of coordination their severity depending on the frequency and level of exposure Nausea weight loss and general emaciation are signs which may be anticipated from this type of exposure to the technical mixture

The diagnosis of benzene hexachloride poisoning should be based mainly on a history of exposure to the product since poisoning by other pesticides as well as the presence of other neurological conditions should be considered

There is no specific antidote for poisoning from benzene hexachloride or its gamma isomer Treatment should be directed toward removing the ingested material from the stomach and intestinal tract by gastric lavage and saline catharsis and counteracting the central nervous system stimulation Since the preparation is slowly absorbed after ingestion prompt institution of removal procedures will rid the body of large amounts of the toxicant but oil cathartics for intestinal evacuation should not be given because oils favor absorption

Central nervous system manifestations can be antagonized by the administration of a barbiturate phenobarbital being the best physiologic antidote Subsequent symptomatic dose of a short acting barbiturate such as sodium pentobarbital may be necessary to control the violent convulsive seizures Epinephrine should be avoided because it might produce ventricular fibrillation After recovery from the acute stages of poisoning the patient should be kept on a fat free or low fat diet and should be treated for liver and renal damage

Precautions —Technical benzene hexachloride and lindane are less dangerous on an overall basis than certain other types of chemicals in common use on the farm and in industry Nevertheless, these pesticidal chemicals and many of the other ingredients used in their formulations have intrinsic toxic properties which demand that caution be observed in their handling and application The following precautions, based on usage and experience with benzene hexachloride and related types of compounds, are believed to provide adequate protection under various circumstances and types of exposure

1 *Dusts and Powders* Special care should be taken to avoid excessive inhalation or skin contact when handling mixing or applying BHC dusts and powders Protective measures sufficient to keep the material out of the eyes and mouth and away from the sensitive parts of the body should be used A change of the clothing after each day s operations and the usual practice of washing the face and hands after using these formulations and before eating should be rigidly followed Containers in which they are kept or stored should be plainly labeled and kept out of the reach of children animals and irresponsible persons Unused portions of these preparations and the containers in which they have been mixed should be treated in the same fashion

2 *Emulsions and Liquids* Persons handling BHC emulsions and liquids (especially concentrates) should wear protective clothing and use suitable equipment In formulating and mixing operations the user should combine adequate ventilation with protective equipment and clothing including respirators goggles solvent resistant gloves aprons and boots In field mixing operations he should wear protective gear to prevent excessive skin and respiratory exposure Material splashed or spilled on the clothing on exposed portions of the body or in working areas should be removed immediately When inflammable or volatile solvents are present in the formulation the customary precautions concerning smoking exposed flames and defective electrical equipment should be observed

3 *Sprays and Mists* Persons engaged in extensive spraying or fogging operations should wear respirators which protect the vulnerable parts of the face Protective clothing should be supplemented with greaseless skin lotions or ointments on body surfaces exposed to solvents and other irritants in the formulation The effectiveness of greaseless skin preparations against specific irritants has not been proven in all instances nevertheless some degree of mechanical protection can be expected

Clothing wetted with mists or sprays should be changed immediately and a bath followed by a complete change of clothing is advised after each day s operation Residual liquid in spray tanks and the washings from spray equipment should be emptied in places where they will not drain into wells streams or ponds accessible to human beings animals or fish

Wettable powders and other types of liquid sprays are not recommended for use on very young animals Calves are known to be injured by them and it is believed the young of other animals are highly susceptible

CLINICAL EXPERIENCE

Clinical reports of human poisonings from the use of technical benzene hexachloride or lindane have been comparatively infrequent in the United States Exposure to dusts of the technical mixture in field application and bagging operations has caused irritation of the upper respiratory tract, eyes, and skin, but these reactions were of minor consequence and required medical assistance in only a few instances Similar reactions to powdered forms of the individual alpha, delta and beta isomers have been experienced by workers engaged in their manufacture and formulation Unusual symptoms in two workers engaged in preparing batches of gamma benzene hexachloride for field tests have also been reported It was suggested that these symptoms might have been attributable to absorption of the compound through the skin

Moderate and severe reactions in three field workers applying technical benzene hexachloride in a petroleum solvent base by means of a thermal aerosol generator have also been observed During the period of application, the wind fluctuated both in direction and intensity, enveloping the workers for varying periods of time One worker is stated to have received a maximum exposure of approximately 20 minutes duration Several hours later he became ill, turned pale, and experienced chills and fever During the night he had severe headaches and perspired profusely A lack of normal equilibrium and depth perception was also noted The patient recovered in approximately ten days with no apparent after-effects The other two workers received less severe exposures Although their symptoms were similar to those of the first worker, they were less intense and of shorter duration Severe headaches aching bones and joints, high temperature (104 F), chills, cold sweats, dizziness, and slight loss of equilibrium were experienced Recovery occurred in 24 and 36 hours respectively Illness in all cases was attributed to the inhalation of excessive amounts of the insecticidal smoke, although certain of the symptoms reported are not commonly associated with this type of poisoning.

An attempted suicide involving the ingestion of approximately 30 gm of a 50% wettable powder of benzene hexachloride whose content of the gamma isomer was about 15% has been reported to the Committee The onset and train of symptoms were stated to be similar to those observed in experimental animals

Two suspected, but unconfirmed, fatalities of BHC spray products have been brought to the attention of the Committee In both instances, the insecticide was considered to have played a secondary, though contributory, role in the cause of death A third case, involving the convulsive death of a child living a few yards away from an insecticide mixing plant, was reported in the medical literature Subsequent investigation failed to disclose anything which would support the statement that benzene hexachloride was implicated

In Argentina, occupational dermatitis in workmen exposed to benzene hexachloride is claimed to have reached as high as 25% (Francone, M P , and Chena, W *Semana méd* 55 573 1949) This alarming incidence of reaction was soon decreased when prophylactic measures and proper hygiene were introduced The authors presented 39 cases of dermatitis in persons engaged in grinding and mixing activities, chemical manipulations, and other manufacturing procedures In all cases except one, the workers were in intimate contact with benzene hexachloride Reaction rates varied from single contacts to those involving several months exposure The disorders, in most instances, were of short duration and disappeared without sequels

A fatal case of poisoning caused by the accidental ingestion of a benzene hexachloride solution was reported in Germany (Kwoczek J *Med Monatsschr* 4 25, 1950) Fifteen cubic centimeters of a 30% solution of benzene hexachloride in an unspecified organic solvent was ingested by a five year old girl weighing approximately 50 pounds (25 kg) Shortly after, difficult breathing, cyanosis and clonic tonic convulsions set in, and some of the solution was vomited Three hours later, the child was hospitalized, her stomach was pumped and therapy to restore a failing circulation was vainly instituted Postmortem examination disclosed pulmonary edema, dilation of the heart, fatty infiltration of the liver, and extensive necrosis of blood vessels in the lungs, kidney, and brain

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies A copy of the rules on which the Council bases its action will be sent on application

R T Stormont, M D , *Secretary*

Progesterone-U.S P (See New and Nonofficial Remedies 1951, p 361)

Solution Progesterone 10 cc vials A solution in sesame oil containing 10 and 25 mg of progesterone in each cubic centimeter Preserved with 0 5% chlorobutanol Meyer Chemical Company, Detroit

Pentobarbital Sodium U.S P (See New and Nonofficial Remedies 1951, p 246)

Tablets Pentobarbital Sodium 0 1 gm Physicians' Drug & Supply Company, Philadelphia

Aminophylline-U S P (See New and Nonofficial Remedies 1951, p 297)

Tablets Aminophylline 0 1 gm S J Tutag & Company, Detroit

Diethylstilbestrol U.S P (See New and Nonofficial Remedies 1951, p 340)

Tablets Diethylstilbestrol 5 mg Keith Victor Pharmacal Company, St Louis

Mephenesin (See New and Nonofficial Remedies 1951, p 165)

Tablets Mephenesin 0 5 gm Kremers Urban Company, Milwaukee

Dihydrostreptomycin U.S P (See New and Nonofficial Remedies 1951 p 130)

Solution Dihydrostreptomycin Sulfate 2 cc and 10 cc. vials A solution containing dihydrostreptomycin sulfate equivalent in activity to 1 gm and 5 gm of dihydrostreptomycin base, respectively Buffered with 1 5% sodium citrate Preserved with 0 2% sodium bisulfite Merck & Company, Inc , Rahway, N J

Phenylephrine Hydrochloride U.S.P (See New and Nonofficial Remedies 1951 p 198)

Solution Neo-Synephrine Hydrochloride 0 2% (For parenteral Use) 2 cc ampuls An isotonic solution containing 2 mg of phenylephrine hydrochloride in each cubic centimeter Preserved with 0 1% sodium bisulfite Winthrop-Stearns, Inc , New York

Riboflavin U.S.P (See New and Nonofficial Remedies 1951, p 448)

Tablets Riboflavin 2 0 mg and 5 0 mg Physicians' Drug & Supply Company, Philadelphia

Secobarbital Sodium (See New and Nonofficial Remedies 1951, p 251)

Suppositories Seconal Sodium A suppository containing 32 5 mg of secobarbital sodium Eli Lilly & Company, Indianapolis

COUNCIL ON FOODS AND NUTRITION

The following products, intended for use in low sodium and other therapeutic diets have been accepted as conforming to the rules of the Council Data regarding composition represent the best available information which is based on submitted reports of analyses The Council has requested continuing analytical studies, especially of the sodium content of products intended for use in low sodium diets because of the natural variations in the composition of processed foods

JAMES R WILSON M D , *Secretary*

Reid Murdoch & Company Division of Consolidated Grocers Corporation, Chicago

MONARCH BRAND DIETETIC PACK STRAINED BEETS consist of the vegetable itself packed in water without any added salt.

Analysis (submitted by manufacturer)—Available carbohydrates (total carbohydrate minus crude fiber) 6.69% crude fiber 0.58% fat (ether extract) 0 03% *protein (N × 6 25) 1 24%* ash (minerals) 0 80% sodium 23 mg /100 Gm potassium 193 mg /100 Gm

Calories—0 32 per gram 9 1 per ounce

Use—For use in low sodium and other therapeutic diets

MONARCH BRAND DIETETIC PACK STRAINED CARROTS consist of the vegetable itself packed in water without *any added salt.*

Analysis (submitted by manufacturer)—Available carbohydrates (total carbohydrate minus crude fiber) 5 94% *crude fiber 0 62%* fat (ether extract) 0 05% protein (N × 6.25) 0 70% ash (minerals) 0 74% sodium 33 mg./100 Gm potassium 239 mg /100 Gm

Calories—0 27 per gram 7 7 per ounce

Use—For use in low sodium and other therapeutic diets

MONARCH BRAND DIETETIC PACK STRAINED PEAS consists of the vegetable itself packed in water without any added salt.

Analysis (submitted by manufacturer)—Available carbohydrates (total carbohydrate minus crude fiber) 8 85% crude fiber 0 65% fat (ether extract) 0.29% protein (N × 6.25) 4 01% ash (minerals) 0 66% sodium 21 0 mg /100 Gm potassium 105 mg /100 Gm

Calories—0.54 per gram 15.3 *per ounce*

Use—For use in low sodium and other therapeutic *diets.*

MONARCH BRAND DIETETIC PACK STRAINED SPINACH consists of the vegetable itself packed in water without any *added salt.*

Analysis (submitted by manufacturer)—Available carbohydrates (total carbohydrate minus crude fiber) 3 0% fat (ether extract) 0 4% protein (N × 6.25) 2.7% ash (minerals) 0 8% sodium 2.0 mg./100 Gm., potassium 572 mg /100 *Gm*

Calories—0.26 per gram 7 4 per ounce

Use—For use in low sodium and other therapeutic *diets.*

The following products have been accepted as conforming to the rules of the Council

JAMES R WILSON, M D., *Secretary*

Beech-Nut Packing Company, Canajoharie, N Y

BEECH NUT STRAINED SWEET POTATOES Ingredients Sweet potatoes, salt and water sufficient for preparation

Analysis (submitted by manufacturer)—Total solids 20 58% moisture 79 42% ash 1 08% fat (ether extract) 0.21% protein (N × 6 25) 0 96% crude fiber 0 71% carbohydrate (other than crude fiber) 17 62%

Vitamins and Minerals	Per 100 Gm
Carotene	2.21 mg
Thiamine	24 0 mcg
Riboflavin	32 0 mcg
Nicotinic acid	0 44 mg
Ascorbic acid	17.34 mg
Calcium	26 0 mg
Phosphorus	31 0 mg.
Iron (total)	0 69 mg
Iron (available)	0.32 mg.
Copper	0 11 mg.

Calories—0 76 per gram 21 5 per ounce

Use—For use in the feeding of infants convalescents and others requiring a soft diet

BEECH NUT STRAINED BANANA Ingredients Frozen banana puree banana flakes sugar lemon juice concentrate calciumpectinate and water sufficient for preparation.

Analysis (submitted by manufacturer)—Total solids 26 24% moisture 73 76% ash 0.53% fat (ether extract) 0.22% protein (N × 6 25) 0 73% crude fiber 0.35% carbohydrate other than crude fiber (by difference) 24 41%

Vitamins and Minerals	Per 100 Gm
Thiamine	20 0 mcg
Riboflavin	23 0 mcg
Nicotinic acid	0.39 mg
Ascorbic acid	0 35 mg.
Crude carotene	0 18 mg.
Calcium	*11 0* mg
Phosphorus	23 0 mg.
Iron (total)	0 43 mg.
Iron (available)	0.38 mg
Copper	0 28 mg

Calories—1 05 per gram 29 8 per ounce

Use—For use in the feeding of infants and young children

The Chicago Dietetic Supply House Inc , Chicago

CELLU BRAND DIETETIC PACK TUNA FISH *Ingredients* *Light* meat tuna packed in distilled water

Analysis (submitted by distributor)—Total solids 30 6% moisture 69 4% protein (N × 6 25) 28 3% fat (ether extract) 0 75% *carbohydrates* (by difference) 0 15% sodium 70 mg /100 Gm

Calories—1 22 per gram 34 6 per ounce

Use—A useful adjunct for the planning of low fat low sodium *dietaries.*

CELLU BRAND WHEAT FREE RYE BREAD Ingredients Pure rye flour (bleached) brown cane sugar shortening (100% cottonseed oil hydro*genated*) *salt*, yeast and lactic acid (edible N F 85%)

Analysis (submitted by distributor)—Total *solids* 67 7% moisture 32.3% ash 2 4% fat 4.2% protein (N × 6 25) 6.3%, crude fiber 0 7%, carbohydrates other than crude fiber (by difference) 54 0%

Calories—2.81 per *gram* 79 5 *per ounce*

Use—For use in certain allergy *diets*

CELLU BRAND WHEAT FREE CAKE. Ingredients Mandioca (*sometimes called tapioca*) flour cane sugar shortening (100% cottonseed oil hydrogenated) egg yolks whole eggs salt vanilla (pure bean) and pure almond extract.

Analysis (submitted by distributor)—Total solids 84 0% moisture 16 0% ash 1 7% fat 28.5% *protein (N × 6 25)* 3 4% carbohydrates (by difference) 51 0%

Calories.—4 73 per gram 134 0 per ounce

Use—For *use in certain* allergy diets

Pratt Low Preserving Company, Santa Clara, Calif

PRATT LOW BRAND PINEAPPLE (CHUNKS & TIDBITS) consists of the *fruit* itself packed in juice without any added sugar or salt.

Analysis (submitted by distributor)—Total solids 15 7% moisture 84.3% ash 0 4% fat (ether extract) 0 1% *protein* (N × 6.25) 0 4%, crude fiber 0 4% carbohydrates other than crude fiber (by difference) 14 4%

Calories—0.59 per gram 16 9 per ounce

Use—For use in calory restricted and other therapeutic diets.

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FIFTH GENERAL ASSEMBLY OF THE WORLD MEDICAL ASSOCIATION

The fifth general assembly of the World Medical Association was held in Stockholm, Sweden, Sept 15 to 20, under the patronage of the King of Sweden Dr Dag Knutson, president of the Swedish Medical Association, extended a welcome to the members and visitors, the heartiness of which became evident on many occasions as the meeting progressed Friendliness was apparent everywhere, and it, together with the medical and other information available to all, made many new friends for the Swedish medical profession, friends who are hoping for an opportunity to renew their acquaintances soon

The World Medical Association was established four years ago, succeeding the Association Professionnelle Internationale des Médecins An interesting account of the founding of the association appears in the July, 1951, issue of the *World Medical Association Bulletin* Progress has been steady, and during each year there has been seen a degree of accomplishment that indicates the need for such an organization The objectives of the World Medical Association are to promote closer ties among the national medical organizations and among the doctors of the world, to maintain the honor and protect the interests of the medical profession, to study and report on the professional problems that confront the medical profession in the different countries, to organize an exchange of information on matters of interest to the medical profession, to present the views of the medical profession to the World Health Organization, UNESCO, and other appropriate bodies, to assist all peoples of the world to attain the highest possible level of health, and to promote world peace At the fifth assembly many problems of common interest were discussed, and participants left each meeting with a broader appreciation of the health problems of other nations, the work of the medical profession in these nations, and the need for further action A brief abstract of the proceedings of the meeting will appear in an early issue of THE JOURNAL

Retiring president Elmer L Henderson, of the United States, in his address mentioned the goal the World Medical Association could seek in membership—representation from 60 nations and 500,000 physicians throughout the world New members at the assembly were the medical associations of Thailand, Japan and Western Germany The medical associations of Haiti and the Republic of South Korea were admitted to membership as the meeting progressed Some of the achievements reported by Dr Henderson for the last year included the development of relations with the World Health Organization and other international groups in the field of medicine and health, the planning of an international conference on questions of professional and technical education, the consideration of freer flow of essential medical supplies between countries, encouragement of the international use of nonproprietary names, the study of relief of medical and religious personnel held with prisoners of war, and the identification of medical personnel Among the reports and other literature received by members of the association are copies of its studies, for example, on postgraduate medical education and specialist training, and the *World Medical Association Bulletin*, which now has a circulation of 10,000 and is self-supporting This journal contains articles in the three official languages of the association, English, French, and Spanish

One of the discussion-provoking reports presented to the assembly described medical services in Australia This report pointed out that the medical profession of Australia had steadfastly refused to cooperate with the previous government because of its declared intention to nationalize medical services So successful was this opposition that the government was unable to implement such plans The governments changed and the minister for health of the new government said in part "Our policy aims to improve the quality of medical service in its essential factors by stimulating individual and community effort It makes the individual a partner of the Government, not its servant One outstanding fact that has emerged from various schemes of socialization of medicine is that Government control of medical treatment, especially the handing-out of treatment for nothing, does not improve the standards of medical treatment or of national or individual health The most that Government control has been able to do has been to retain the status quo ante In most cases, however, there has come inevitably a steady deterioration of the morale of the people, loss of skill of the doctors, especially general practitioners, through the enormous wastage of time in filling in forms and consequent degeneration of the health of the patients

"Experience of the rest of the world in regard to health schemes indicates that the most likely system to satisfy all these requirements (essential factors for success of a health scheme) is one of voluntary insurance Voluntary insurance will prove as valuable against unpredictable sickness as it has with life, shipwreck, theft and other risks " When these views were expressed at the general assembly meeting they were roundly supported as general principles worthy of the attention of other government officials There seemed to be no doubt about the desire of those at the assembly to maintain freedom in medical care for the patient and physician, so that the best possible medical care could be provided without the stultifying influence of government domination

One aspect of this meeting that was commented on repeatedly by visitors who were seeing for the first time the delegates of the World Medical Association in action was the way in which representatives of various countries, often with different practices and medical problems, could sit together and discuss so much in common, with so little difference of opinion These newly initiated visitors were impressed with the thought that when questions of health are involved the interests of physicians are basically the same the world over, and when they are given the opportunity to meet and freely exchange information physicians can contribute much for the good of all countries In the World Medical Association this is possible because the association is free from government control It is supported by national medical associations such as the American Medical Association, and is not governed by policies defined by governments

Dr Elmer Henderson retired as president of the World Medical Association and was succeeded by Dr Dag Knutson of Sweden The president-elect chosen for the coming year is Prof G Krimpas of Greece, where the assembly will be held in 1952 In 1953 the assembly will meet in Holland, and in 1954 in Italy Three members were elected to the council because of the expiration of terms of office Dr Pierre Glorieux of Belgium was elected to succeed himself, and Drs Elmer L Henderson of the United States and L R Mallen of Australia were elected to fill the other vacancies Dr T C Routley, Secretary of the Canadian Medical Association, who had served as chairman of the council for four years, was given a warm vote of thanks for his untiring efforts and able leadership His work and that of the secretary-general, Dr Louis H Bauer, president-elect of the American Medical Association, and of the other officers and delegates have meant much in the development of the progress accomplished by the World Medical Association The members also have made an immeasurable contribution by participating actively and with enthusiasm Dr Knutson in his presidential address said "The W M A embodies ideas of high quality well worth being promoted The doctors of the world should be proud of their organization They should make it through their work ever more worthy of their support and their pride Ultimately this would bring to mankind if not health and happiness at least a better starting point from which one and as a possible consequence the other can be attained And that is what we the doctors of the world must hope for and work for That is in fact, what we have always worked for in our own field, on the whole true to principles the wisdom and humanity of which has not been doubted for some two thousand years " Evidence of this unity of interest was obvious as one looked at the assembly meeting in Stockholm's beautiful parliament building, where simultaneous translations were being made for those not conversant with the language of the speaker and where this sign of modern technical progress seemed to blend so well with the seriousness of the subjects under discussion Additional evidence of the common interests of physicians was seen at the social gatherings, where men and women from all nations met with understanding and enjoyment At the meetings there were delegates and observers from more than 30 countries At the banquet there were more than 300 persons present to enjoy the hospitality of the Swedish Medical Association From the United States alone there were more than 40 observers in addition to officers delegates, and alternate delegates, and there were observers from more than 20 other national and international organizations It was inevitable that the fifth general assembly and the second medical editors conference, which followed the conclusion of the work of the assembly, should be successful The planning, the participation, and the setting were overwhelming factors in favor of success

It may seem like a long time before the sixth general assembly convenes in Greece in 1952, but time moves surprisingly quickly, and it is not too early for physicians to plan on attending this meeting They can be assured of a warm welcome from the physicians in that country

RED FEATHER CAMPAIGNS

Within the next two weeks, United Red Feather campaigns will be conducted in more than 1 500 communities throughout the nation In a statement appearing elsewhere in this issue (p 579), Dr John W Cline, President of the American Medical Association, points out that this year the contributed funds will sustain the United Defense Fund as well as numerous community health, welfare, and recreational activities The United Defense Fund performs services of great importance, caring for the military through the United Service Organizations, assisting civilians in densely populated defense areas, establishing community projects through the United Community Defense Services, and providing clothing, blankets, and sewing material to the Koreans through the American Relief to Korea Through the individual Community Chests, the Red Feather campaigns provide assistance for voluntary hospitals, clinics, nursing services, and other health and welfare agencies for citizens in lower income brackets The extension of medical and health services to the needy by voluntary means deserves the whole-hearted support of the medical profession

NEARLY A MILLION TRAFFIC DEATHS

According to figures released at the end of July, 1951, by the National Safety Council, 983,000 lives have been lost in traffic deaths since the advent of the automobile little more than 50 years ago The council estimates that the 1,000,000th victim will be killed during the latter half of December of this year and that if the present rate of traffic deaths continues, a second million will be killed within 30 years In the hope of postponing the estimated date of the 1,000,000th fatality, the council is undertaking an extensive campaign to focus public attention on the rising toll of traffic deaths Members of the medical profession will be anxious to support efforts directed toward reducing automobile accidents which now rank as the sixth major cause of death in the nation The individual physician can cooperate with the National Safety Council by discouraging driving in patients with health impairments known to increase the risk of accidents, by publicizing the role of physical and mental disturbances in accident causation and by bringing home to the proper authorities the necessity for periodic mental and physical examinations for every driver

ARTIFACTS IN THE ESTIMATION OF PROTEIN-BOUND IODINE

In the quantitative estimation of protein-bound iodine, the proteins of the serum are precipitated and then washed free of inorganic iodine Thus the iodine that is finally estimated, the protein-bound iodine, is essentially iodine of the thyroid hormone Under ordinary circumstances protein-bound iodine is regarded as a reliable index of thyroid function

During the course of various diagnostic and therapeutic procedures, organic compounds containing large amounts of iodine are used Some of these foreign substances are precipitated with the protein and are not removed by repeated washings, with resulting erroneously high values for the protein-bound iodine of serum Man and Peters[1] studied the effect of three different radiopaque dyes used for roentgen visualization The substances studied were iodoalphionic acid (priodax®), iodopyracet (diodrast®), and iodized oil (lipiodol®) Of the seven subjects who received the first dye, none having demonstrable liver, kidney, thyroid, or gallbladder disorders, in only one did the protein-bound iodine values fall to pretreatment levels within 10 weeks after the administration of the iodine-containing compound These investigators suggest that it would not be advisable to determine the protein-bound iodine of the serum in a patient less than 12 weeks after the administration of iodoalphionic acid, in addition, the values should be checked by repeated analyses two weeks later On the other hand, the elimination of iodopyracet is rapid, when normal kidney function is present, reliable values for the protein-bound iodine may be obtained after a period of two weeks Iodized oil is excreted at a variable rate and slowly, indications are that deposits of the dye discharge iodine slowly into the blood stream for a long period of time and that part of this iodine is precipitated with the protein

In cardiac conditions in which detection of derangements of thyroid activity is important, Meyers and Man[2] found that the protein-bound iodine values were low when mercurial diuretics had been given After intramuscular administration of meralluride (mercuhydrin®) there was a lowering of the protein-bound iodine for at least 24 hours, depending on the rate of excretion of the mercury These investigators suggested that the estimation of protein-bound iodine should be delayed for at least 48 hours after administration of meralluride When the excretion of mercury is delayed, a longer period must be allowed to elapse The falsely low values for protein-bound iodine are believed due to the formation of insoluble mercuric iodide or iodate during the process of digestion, these latter substances not being distillable as is iodine Other mercurial diuretics were not studied, though it is believed they should produce similar depressions on the level of protein-bound iodine

Under ordinary circumstances the protein-bound iodine of the serum is a reliable index of activity of the thyroid gland However, factors that are not related to functional activity of the thyroid gland can influence the results of this determination Probably the skepticism of many clinicians regarding the ability of the laboratory to do this difficult test arises because of the inconclusive results obtained, possibly owing to factors such as are discussed above

ONCOLYTIC ACTION OF EPINEPHRINE

In 1948 it was shown by Lewis[1] and her associates of Wistar Institute, Philadelphia, that, when tissues from sarcoma-immune rats are minced with sarcoma grafts, the only organ that inhibits growth of the graft is the adrenal gland Subsequent tests with the adrenals of normal rats showed a similar inhibition The conclusion was drawn that graft inhibition was due to the action of one or more of the normal adrenal hormones Tests were therefore made of the oncolytic action of epinephrine[2]

Inbred albino rats and native tumors that were 100% transplantable were used, with four types of procedure 1 Implantation of minced tissue to which epinephrine had been added The epinephrine used was in the form of a sterile solution containing 1 mg of epinephrine per cubic centimeter of isotonic sodium chloride solution, to which 0 1% sodium bisulfate and 0 5% chlorobutanol were added as preservatives 2 Intratumor injection of epinephrine 3 Local injection around small tumors growing in susceptible rats 4 Injections of epinephrine into local subcutaneous tissues two hours to 10 days prior to implantation of the graft Control tests were made with isotonic sodium chloride solution

The tests showed that the addition of epinephrine to minced sarcoma tissue inhibits its growth in 52% of the cases Similar results were obtained from intratumoral or peritumoral injections of epinephrine The most suggestive results, however, followed injection of epinephrine into subcutaneous tissues prior to implantation of the graft The grafts failed to grow in 21 of the 34 rats that received grafts two to three hours after local epinephrine injection The grafts grew in five out of 13 rats after a lapse of three days, in six out of nine rats after a lapse of seven days, and in all rats after a lapse of 10 days Lewis concluded from these tests that the tumor inhibitory action of epinephrine is due to local damage to vascularization, which is followed by tumor adsorption

In all rats in which tumors were absorbed or failed to grow, viable grafts were implanted on the opposite side of the body three weeks after the first implantation Of the 61 rats thus tested, 40 showed effective resistance to growth of the second graft The initial epinephrine sarcoma injection thus functioned as an effective prophylactic sarcoma vaccine

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[1] Man E B and Peters J P Artificial Values of Serum Precipitable Iodine, J Lab & Clinical Med 35:280, 1950

[2] Meyers, J H and Man E. B Artifactual Values of Serum Precipitable Iodine After Clinical Intramuscular Injections of Mercuhydrin J Lab & Clin Med 37:867 1951

[1] Lewis M R. Aptekman P M., and King H D Retarding Action of Adrenal Gland on Growth of Sarcoma Grafts in Rats J Immunol 61:315 1949

[2] Lewis M R and Aptekman, P M Inhibitory Action of Adrenalin Growth of Rat Sarcoma, Science 113 557 (May 11) 1951

ORGANIZATION SECTION

DR. CLINE ON UNITED DEFENSE FUND AND RED FEATHER CAMPAIGN

The United Defense Fund fills a great need during this period of mobilization and military activity in Korea It is sustained by contributions made to the United Red Feather Campaigns The latter perform essential functions in the normal civilian life of our communities These worthy projects depend upon money raised during the Fall campaigns They deserve the wholehearted support of physicians everywhere

More and more of our colleagues are being called into the Armed Forces Our contributions will provide important services for them and at the same time assist us at home by extending the activities of voluntary hospitals clinics, nursing services and other health agencies for citizens in the lower income groups

'The medical profession has always advocated extension of medical and health services to these people by voluntary means Private support will eliminate the hazard of governmental participation and control

"The U D F Agencies are badly needed to care for the military through the U S O to assist civilians in densely populated defense areas to establish community projects through the U C D S and to provide clothing for the Koreans through A R K These are splendid activities of great importance at the present time

This year, it is possible for us to subscribe to both the Red Feather home activities and the U D F National Service Programs at one time Let us get behind the Red Feather Campaign this year and make it a great success We can render great service to our own communities and our Armed Services by so doing and can avoid the danger of government taking over these activities'

John W Cline M D President,
American Medical Association

MEETINGS OF OFFICIAL BODIES

The Board of Trustees Room, on the ninth floor of the Association s building will be the meeting place of various official bodies during October and November

The Public Relations Advisory Committee, composed of executives of state medical associations which was recently appointed to assist the American Medical Association in handling some of its public relations problems will have a two day meeting on Oct 4 and 5

The Committee on Constitution and By Laws established by the House of Delegates will meet on Oct 8, for the purpose of carrying out the mandates of the House with respect to proposed amendments to the Constitution and By Laws for action at the Clinical Session in Los Angeles in December One of the tasks involved is the provision of a single membership classification

An important meeting of the Judicial Council will be held on Oct 9 On Oct 16 there will be a meeting of the Council on Scientific Assembly and a meeting of the Annual Conference of Section Secretaries with the Council The Council will consider final arrangements for the Clinical Session in Los Angeles and will make tentative plans for the 1952 Annual Session, to be held in Chicago in June with particular reference to the program of the General Scientific Meetings on the first two days of the Session The Conference of Section Secretaries is held in the fall of each year and brings together the secretaries of the sections of the Scientific Assembly in order that ideas and plans for the various section programs may be compared and coordinated with the assistance of the members of the Council

The Board of Trustees will meet on Oct 19 and 20 A State Medical Journal Conference, to be attended by the editors and business managers of the journals that are serviced by the State Medical Journal Advertising Bureau, will be held in the Assembly Room adjacent to the Board of Trustees Room on Nov 12 and 13 This conference will consider among other topics aspects of medical journalism mechanics of make up, and cost problems

The annual meeting of the Committee on Pesticides, a division of the Council on Pharmacy and Chemistry, which studies health problems associated with the use of insecticides, fungicides, rodenticides, herbicides, and other types of economic poisons, will be held about the middle of November

AWARD OF THE GOLD KEY IN PHYSICAL MEDICINE

At the Annual Meeting of the American Congress of Physical Medicine, held in Denver, Sept 5, the Gold Key Award of the American Congress of Physical Medicine was awarded to Howard A Carter, former Secretary of the Council on Physical Medicine and Rehabilitation of the American Medical Association, for 'many years of distinguished service" to the field of physical medicine Mr Carter is a graduate of mechanical engineering of Illinois Institute of Technology of Chicago He was instructor in physics at the University of Georgia for four years and instructor in mathematics at Lewis Institute for two years He is continuing with the Council as Director of Biophysical Investigation

The Gold Key Award is the highest recognition offered by the congress, an association of physicians specializing in physical medicine and rehabilitation Three others also received the award Stafford L Osborne, Ph D, Department of Physical Medicine, Northwestern University Medical School, for research in physiology and electrotherapeutics, Winfred Overholser, M D, George Washington University Medical School, Washington, D C, for his work in occupational therapy and rehabilitation, and Walter J Zeiter M D, Cleveland Clinic Foundation, for his services as executive director of the Congress of Physical Medicine

A M A TO SPONSOR TV "CLINIC"

A one-day clinic concerned with basic problems in use of television for health education will be sponsored by the Bureau of Health Education of the American Medical Association at the Biltmore Hotel, New York, on Tuesday, Oct 16 it was announced by Dr W W Bauer, Director of the Bureau

Representatives of numerous agencies, networks, and organizations concerned with health education are included on the Steering Committee

The clinic' is open to anyone interested in this field There is no registration fee

Inquiries concerning registration should be made to Marshall-Hester Productions, 521 Fifth Ave, New York City, radio and television consultants and producers for the Bureau

MEDICAL NEWS

CALIFORNIA

Dr Tiselius Named Hitchcock Lecturer—Dr Arne V K Tiselius, Swedish Nobel Laureate, has been named Hitchcock lecturer for the fall semester at the University of California, Berkeley Professor Tiselius of the University of Upsala Stockholm, will deliver three semipopular lectures, all open to the public, beginning Sept 24, on advances in the biochemistry of proteins Professor Tiselius was awarded the Nobel Prize in chemistry in 1948 for his work on electrophoresis and adsorption analysis, and in particular for his discovery of the complex nature of the serum proteins The Hitchcock Lectures were established by the late Mr Charles M Hitchcock

CONNECTICUT

Connecticut Trudeau Society—The New England Tuberculosis Conference will be held at Hartford Oct 10 11 In conjunction with this meeting the Connecticut Trudeau Society plans a Pembine type meeting at the Hartford Hospital Amphitheatre on the afternoon of Oct 11 A short business session will be followed by a presentation and discussion of treatment of consecutive cases admitted at the Laurel Heights State Tuberculosis Sanatorium and Uncas-on Thames Sanatorium The moderator will be Dr Donald S King Dinner will follow the meeting The society extends a cordial invitation to interested physicians to attend

Hartford Hospital Medical Education Program—Hartford Hospital is offering a series of weekly medical lectures beginning Oct 6 and extending through Dec 29 with the exception of Thanksgiving and Christmas weeks Lectures to be given at the hospital on Saturday mornings at 11 o clock are as follows

Oct 6 Chester S Keefer Boston Newer Trends in the Use of Antibiotics
Oct 13 Warfield T Longcope Baltimore Case Presentation
Oct 20 Raymond D Adams Boston Cerebrovascular Accidents
Oct 27 Byron F Smith New York Bone Surgery of the Orbit
Nov 3 Cyril N H Long New Haven The Adrenal Pituitary Axis
Nov 10 Siegfried J Thannhauser Boston Problem Case Presentation
Nov 17 Levin L Waters New Haven Recent Studies in Experimental Vascular Disease
Dec 1 Marvin H Grody St Louis Sterility A Community Problem
Dec 8 Bradley L Coley New York Controversial Points in the Diagnosis and Treatment of Tumors of Bone
Dec 15 Garfield G Duncan Philadelphia Practical Aspects of the Management of Diabetes Mellitus.
Dec 29 Frederick S Ellison Hartford Anorectal Problems

DELAWARE

Personal—Dr Charles E Gill, Pittsfield Mass, has been appointed medical director of the Brandywine and Edgewood sanatoriums of the state department of health Dr Gill has been associated with the Massachusetts Department of Public Health since 1932 and until recently had been health officer in Pittsfield since the summer of 1946

DISTRICT OF COLUMBIA

Paul Lewis Award in Chemistry.—This is the second consecutive year that a scientist at the National Institute of Arthritis and Metabolic Diseases has been selected for the Paul Lewis Laboratories Award This year s award went to Bernard L Horecker, Ph D for his contributions to enzyme chemistry His recent investigations, dealing with a pathway of oxidation of carbohydrates have led to an understanding of the mechanism of synthesis in the cell of the pentoses The Paul Lewis Award was established to stimulate basic research in enzyme chemistry It is administered by the American Chemical Society and consists of a gold medal and $1,000 This is the seventh of the annual national awards to be made by the Milwaukee laboratory

Personals—Dr William Henry Sebrell Jr, medical director of the U S Public Health Service, has been elected to the board of directors of the National Society for Medical Research——Dr Roland B Scott, head, department of pediatrics, Howard University School of Medicine, Washington, returned to his university duties July 1 Dr Scott has completed a year's study while on sabbatical leave at the Institute of Allergy of the Roosevelt Hospital, New York, under the direction of Dr Robert A Cooke——A recent decree signed by the President of the French Republic names Dr Winfred Overholser a Chevalier in the French National Order of the Legion of Honor in recognition of "services rendered to the progress of medical science in the field of psychiatry and for outstanding contribution to international scientific cooperation" Dr Overholser is superintendent of St Elizabeth's Hospital, a past president of the American Psychiatric Association, and was vice president of the First World Congress of Psychiatry held in Paris in September, 1950

GEORGIA

Dr Tager to Head Department.—Dr Morris Tager came to Emory University School of Medicine, Atlanta, on July 1 as professor and chairman of the department of bacteriology and immunology Dr Tager was previously a member of the faculty of Western Reserve University School of Medicine, Cleveland

Associated Surgical Groups to Meet—The 1951 annual session of the Associated Surgical Groups of Georgia will be held at the Bon Air Hotel Augusta, Oct 18 under the chairmanship of Dr Peter B Wright of Augusta Participating groups include the Georgia Chapter of the American College of Surgeons, the state Urological Association, Society of Obstetrics and Gynecology, Society of Anesthesiologists, and Radiological Society, the surgery department of the Medical College of Georgia, the Veterans Administration Hospital and the Richmond County Medical Society The printed program lists the following guest speakers Drs Alton Ochsner and John Adriani, New Orleans, Dr Elmer Hess Erie, Pa, Dr Lenox D Baker, Durham N C, Dr Joseph D Guess, Greenville S C, Dr Julian Johnson, Philadelphia Dr Ralph M Caulk, Washington, D C, and Dr George J Curry Flint Mich Combined sessions of all groups have been scheduled at 8 a m and 7 30 p m

ILLINOIS

General Practice Annual Session—The Illinois Academy of General Practice will hold its annual scientific assembly with lectures devoted to general medicine and surgery, atomic medicine, and civil defense, at the Sheraton Hotel, Chicago, Oct 14-16 Among the speakers will be Brigadier General Elbert De Coursey, Washington, D C, who will speak on 'Atomic Bomb Effects—Teaching Aids from Armed Forces Institute of Pathology" Round table discussions will complete the afternoon programs on Monday and Tuesday Guest speakers at the annual banquet Monday evening at 7 o clock will be Illinois Senator Everett M Dirksen

Appointment to Advisory Cancer Board—A new appointee to the Advisory Board to the Bureau of Cancer Control of the state department of public health is Dr James M Christie, surgeon for the Christie Clinic in Champaign He replaces Dr James P Simonds of Chicago Members reappointed are Dr Charles L Leonard present chairman of the board who is a surgeon on the staff of St Anthony s Hospital, Rockford and director of the cancer clinic in that hospital, and Dr Edwin F Hirsch, head of the pathological laboratory of St Luke s Hospital, Chicago Terms of the members are for three years Other members of the advisory board are Drs James P Grier, Evanston, Robert E Bowen Springfield, Roswell T Pettit Ottawa and Gilbert H Edwards, Pinckneyville

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Physicians are invited to send to this department items of news of general interest for example those relating to society activities new hospitals education and public health Programs should be received at least three weeks before the date of meeting

Chicago

Nutrition Grants—Grants in aid totaling $140,000 for the support of scientific studies in agriculture and human nutrition have been made by Swift and Company Twenty nine grants have been approved for 22 universities, colleges, and other research institutions in the United States and two in Canada, for 1951-52 Previous grants totaling $21 000 have been made at intervals since June 1950

Personals—Dr Irving F Stein, senior attending physician in obstetrics at Michael Reese Hospital, will address the Brazilian Sterility Society meeting from Oct 14-19 in Rio de Janiero, on the diagnosis and treatment of bilateral polysystic ovaries Dr Stein is a past member of the board of directors of the American Conference on Sterility——Dr Edward F Rosenberg member of the Michael Reese department of medicine will speak at the University of Louvain in Belgium on Nov 12 on the occasion of the 25th anniversary of the founding of the Belgium League Against Rheumatism His subject will be experiences with hormone therapy in rheumatic diseases

University of Illinois Faculty Promotions.—Promotion of seven members of the faculty of the University of Illinois College of Medicine to the rank of full professor has been announced as follows Dr Géza de Takats, clinical associate professor of surgery to clinical professor, Dr Morton I Grossman, from associate professor of clinical science to professor, Dr John E Kempf, from associate professor of bacteriology to professor, Dr Adolph Rostenberg Jr from associate professor of dermatology to professor, Dr Max S Sadove, who heads the division of anesthesia, from associate professor of surgery to professor, Dr Walter H Theobald, from clinical associate professor of otolaryngology to clinical professor and Dr Willard Van Hazel, from clinical associate professor of surgery to clinical professor

LOUISIANA

Personal—Dr William Herbert Harris Sr, professor of pathology emeritus at Tulane University of Louisiana School of Medicine, New Orleans, retired July 1 He had been on the faculty of Tulane for over 40 years

Axson Choppin Award.—Dr Ralph E King, state senator from Winnsboro, was presented the Axson Choppin Award at the annual meeting of the Louisiana Association of Public Health Workers held recently in Alexandria This award which honors the memory of the first and second state health officers in Louisiana is presented annually by the association to someone outside the field of public health who has rendered valuable service to the cause of public health in the state

MARYLAND

Symposium on Drug Addiction—The Medical and Chirurgical Faculty of Maryland and the Baltimore City Bar Association has arranged this symposium to be held Oct 13 at 9 30 a m at the faculty headquarters in Baltimore Every member is urged to attend The following will participate in the panel discussion Judge Joseph Sherbow Mr Anselm Sodaro state s attorney of Baltimore Mr Roszel C Thomsen member of the bar and president of the Baltimore city school board and Dr Earl H Dearborn of the department of pharmacology of the Johns Hopkins University Baltimore It is hoped that Dr Victor H Vogel medical officer in charge of the United States Public Health Service Hospital at Lexington Ky, will also participate

MASSACHUSETTS

Cutter Lecture on Preventive Medicine—The Harvard School of Public Health announces that Dr Dugald Baird Regius Professor of Midwifery at the University of Aberdeen Scotland will deliver the Cutter Lecture on Preventive Medicine on Oct 15 at 5 p m in Amphitheatre D of the Harvard Medical School Boston on Preventive Medicine in Obstetrics " The lectures have been held since 1912 The medical profession, medical and public health students and others interested are cordially invited to attend

New Adolescent Unit—The Children's Medical Center, Boston, has taken its first step in the development of facilities for the care of adolescents For years the staff has recognized the need of organizing special medical service for adolescents Hospital care, and outpatient and consultation service on all types of illness of this age group will be provided The unit will give particular attention to conditions and problems which are most troublesome in the adolescent years contagious diseases, athletic injuries psychological problems growth and glandular disturbances, and reading and scholastic difficulties Dr J Roswell Gallagher, director of the adolescent unit, for 20 years has devoted his attention exclusively to this age group He has been successively physician at the Hill School in Pottstown Pa., Phillips Academy in Andover, and Wesleyan University in Middletown, Conn In 1948 he was appointed consultant in medicine to the staff of the Children's Medical Center He is assistant professor of child health in the Harvard School of Public Health and will participate in the teaching of physicians and other medical workers in research on the health problems of adolescence

MICHIGAN

Faculty Promotions—Faculty promotions at the University of Michigan Medical School, Ann Arbor, effective with the start of the fall semester, are as follows Promoted to the rank of professor are Charles Roosevelt Brassfield, Ph D, (physiology) *Henry Charles Eckstein, Ph D*, (biological chemistry), Dr Moses Michael Frolich (psychiatry), and Dr Herman M Pollard (internal medicine) Promoted to associate professors are Dr Robert S MacIntyre (roentgenology), Drs Otto T Mallery Jr, and James VanGundia Neel (internal medicine), and Drs Ralph D Rabinovitch and Herbert T Schmale (psychiatry) Title of assistant professor was given to Dr William C. Baum (surgery), Ernest E Evans and Donald Joseph Merchant (bacteriology), Drs Stefan S Fajans, Kenneth P Mathews, Henry Kramer Schoch Jr, and Arnold Wollum (internal medicine) and Dr Bruce D Graham and Dr George H. Lowrey (pediatrics and communicable diseases) In the School of Public Health, full professorships were awarded Carl E Buck and Dr John J Hanlon (public health practice)

MINNESOTA

Postgraduate Medical Seminars.—An enlarged program of medical seminars conducted for practicing physicians by the University of Minnesota Medical School, began Sept 12 and 13 in 10 key cities throughout the state Worthington, Austin, Rochester Faribault Mankato, Glencoe Willmar, St. Cloud, Alexandria, and Hibbing The meetings are planned each year by the university medical school s department of postgraduate education and are presented in cooperation with the state medical association Each seminar covers points of current interest in different fields of medicine Emphasis is on practical methods of diagnosing and managing the more common diseases Eight weeks long, the seminars will run on Wednesday evenings from Sept 12 to Oct 31 in six of the cities and on Thursday nights from Sept 13 to Nov 1 in the other four communities Clinical and full time members of the medical faculty are instructors

Construction to Begin on Mayo Memorial—Contracts totaling $9 678 770 have been awarded for construction of the Mayo Memorial Medical Center on the University of Minnesota campus in Minneapolis Originally planned as a 22 story structure, the project was pared down to 14 stories when the 1951 legislature declined to appropriate additional funds for the larger center Construction will get underway as soon as final approval is secured from the United States Public Health Service Foundations are already completed The new contracts cover completion of the entire project except for the 14th floor, which will be enclosed with option to finish later Funds for the Mayo Memorial Medical Center were provided by appropriations of the 1945, 1947 and 1949 legislature totalling $7,000 000 by grants from the National Cancer Institute National Heart Institute and by private gifts Two million dollars came from the U S Public Health Service from funds provided by the Hill-Burton Act The center will be a memorial to the late Drs William J Mayo and Charles H Mayo of Rochester The brothers died in 1939

MISSOURI

University Appointment—Dr Frederick G Germuth Jr, has been appointed assistant professor of pathology at Washington University School of Medicine, St Louis Chief of the department of immunology at the National Institute of Health, Bethesda, Md, since 1948, Dr Germuth was formerly in the laboratory of experimental therapeutics at Johns Hopkins University School of Medicine, Baltimore, from which he received his medical degree in 1945

Institute on Child Development—The second annual Institute on Child Development, featuring speakers from the fields of medicine, psychology, and education, and titled Know Your Child," will be offered beginning Oct 9 by the St Louis University Adult Education Center under the sponsorship of the university's Speech Clinic The institute is designed to outline the important points in the physical, mental, emotional, and social development of the child, and is directed primarily at parents and young married or engaged couples Lectures, all by members of the university faculty include the following

Oct 9 Peter G Danis Your Child s Growth
Oct. 16 Walter L. Wilkins Ph D Your Child s Emotions
Oct. 23 Kenneth C Marshall D D S Your Child s Teeth
Oct 30 Fullerton W Luedde Your Child s Vision
Nov 6 Mrs Mary Lou Rush Your Child s Speech
Nov 13 Miss Diane Foster Your Child s Play
Nov 20 Miss Katherine Clarke Literature for Young Children
Nov 27 Rev Robert A Johnston S J Religious Training for the Young Child

Registrations will be taken up to the opening of the first session, and may be made by mail or in person at the Adult Education Center, 3673 West Pine St St Louis

NEW JERSEY

Foundation for Microbiology—The establishment of this foundation was announced Aug 17 by Selman A Waksman Ph D, director of Rutgers University Institute of Microbiology, New Brunswick, to encourage with financial aid the study of microbiology in all parts of the free world Dr Waksman, codiscoverer of streptomycin, has transferred to the new foundation half of his remaining royalty rights of 10% in streptomycin, neomycin, and other antibiotics The 5% royalties are expected to yield $40 000 a year to the foundation Unchanged are the 82½% royalty right that goes to Rutgers Research and Endowment Foundation and the 7½% being distributed to the other scientists, former students of Dr Waksman, who participated in the discovery and development of streptomycin The foundation's interests will range from the establishment and support of professorships and fellowships to the granting of funds to finance publication of technical papers and books The foundation also will sponsor scientific meetings and conventions and help in the development of microbiological discoveries and processes for practical use Trustees of the new foundation besides Dr Waksman are Dr Harry Eagle of Chevy Chase, Md, head of the National Institute of Health s section on experimental chemotherapy, and *Dr Rene J Dubos, New York*, a member of the Rockefeller Institute for Medical Research The incorporators in addition to the three trustees, are A Dudley Watson Highland Park attorney and Van Wie Ingham of North Brunswick assistant to Dean William H Martin of the College of Agriculture at Rutgers

NEW YORK

Dr Bishop Heads Biochemistry Department.—Charles W Bishop Ph.D has been appointed head of the department of biochemistry and assistant laboratory director of the Chronic Disease Research Institute of the University of Buffalo He came to the University of Buffalo Medical School in 1947 as assistant professor in biochemistry

New Department of Physical Medicine—The University of Buffalo has established a department of physical medicine and rehabilitation at its Chronic Disease Research Institute Dr Henry V. Morelewicz, department chief, will head a program of research, education, and training Dr Morelewicz also has been appointed chief of physical medicine and rehabilitation at Mercy Hospital

Dr Arthur E MacNeill, research associate in the physiological sciences at Dartmouth Medical School, Hanover, N H, has been designated chief of laboratories at the institute A former flight surgeon in the U S Army Air Corps and medical research consultant to the U S Department of State, Dr MacNeill will have administrative supervision over all the laboratories but will devote the major portion of his time to experimental research in the use of mechanical devices as aids in medical treatment

New York City

Dr Hetrick Honored—Dr J A Werner Hetrick, dean of New York Medical College and president of Flower and Fifth Avenue Hospitals, was honored at a testimonial dinner Sept 22 at the Waldorf Astoria Hotel, attended by statesmen, educators, physicians, and business leaders Tribute was paid to his 10 years of service as dean, during which period the institution has grown into one of the leading medical centers in the country Dr Frank J Borrelli, head of the college department of radiology and chairman of the committee sponsoring the dinner, presented a bronze plaque to Dr Hetrick inscribed with a testimonial of appreciation for his 25 years of service to the institution

Study of Accidents Among Childen—With accidents now constituting the leading cause of death in this country among children from 1 to 19 years of age a fresh approach to the problem is to be made this fall through a year s pilot study at the Babies Hospital of the Columbia Presbyterian Medical Center, supported by a grant from the Metropolitan Life Insurance Company Following the first meeting Sept 21 of the committee and staff directing this study, it was emphasized that child accidents present a major and alarming public health problem At ages 1 to 4 years, accidents kill twice as many children as measles, scarlet fever, whooping cough, diphtheria dysentery, tuberculosis, and poliomyelitis combined Since 15% to 20% of the children have 80% to 90% of the home accidents, the study will include a thorough analysis of the history and current status of a number of child accident repeaters and their families in comparison with a control group relatively free of the accident habit It is hoped that this study will produce information that can be translated into practical guidance procedures The study will be under the guidance of an advisory committee composed of leaders in the fields of education, psychiatry, epidemiology, pediatrics, accident prevention, and research methods, including representatives of the Columbia Presbyterian Medical Center and of the Metropolitan Life Insurance Company Dr Rustin McIntosh is serving as chairman of this committee the director of the study is Dr William S Langford, head of the Pediatric Psychiatric Clinic at Babies Hospital

OREGON

State Medical Meeting.—The Oregon State Medical Society will hold its annual session Oct 10-12 at the Masonic Temple, Portland, under the presidency of Dr William J Weese of Ontario Dr John W Cline, San Francisco, President of the American Medical Association, will address the evening session Thursday on common lesions of the breast Other guest speakers are those selected for the Sommer Memorial Lectures, which, for the first time since their inauguration in 1941, are being given during the session of the state medical society The lectures are as follows

Oct. 10 10 a m Charles A Janeway Boston Preventive Pediatrics—Midcentury Version
  1 p m Charles A Janeway The Nephrotic Syndrome An Important Chronic Disease Problem in Children
  8 p m Frederic H Bentley Newcastle upon Tyne England, Gastric Pain
Oct 11 9 10 a m Charles A Janeway Blood and Blood Derivatives.
  1 p m Frederic H Bentley Clinical Aspects of the Blood Supply of the Stomach
  4 10 p m Frederic H Bentley Gastric Surgery
  8 p m Virgil S Counseller Rochester Minn Urinary Incontinence Etiology and Treatment
Oct. 12 9 10 a m Virgil S Counseller Vaginal Hysterectomy Indications, Advantages and Surgical Technic
  1 p m Virgil S Counseller Vesical Fistulas Etiology and Treatment.

There will be four panel discussions during the meeting the first on Wednesday afternoon on care of the premature, with Dr S Gorham Babson of Portland as moderator, the second on Thursday afternoon on shock and its aftermath, with Dr William K Livingston, Portland, serving as moderator, the third Friday afternoon on essentials of prenatal care, with Dr Clifford L Fearl, Portland, moderator, and the last Saturday morning on infectious diseases and the proper use of antibiotics, Dr Arthur W Frisch, Portland, moderator The annual banquet will be held Friday at 7 p m , when Dr Cline will speak on problems confronting medicine in the immediate future

PENNSYLVANIA

Graduate Education Institute Begins.—The fifth annual program of the Graduate Education Institute, sponsored by the Medical Society of the State of Pennsylvania, opened in 10 teaching centers throughout the state the first week in October with an estimated 900 general practitioners enrolled. Centers are located in Allentown, Clearfield, Harrisburg, Johnstown, Lancaster, Butler, Reading Washington, Scranton, and Williamsport A faculty of 180 instructors from the medical schools in Philadelphia and Pittsburgh has been engaged to present a variety of medical subjects Lectures will be conducted one day a week for five weeks in each center and will continue for five weeks in the spring Dr Charles W Smith, Harrisburg, is chairman of the Commission on Graduate Education of the state society Subjects to be presented this fall include allergy, heart disease, neurology, obstetrics, endocrine disorders, physical medicine and rehabilitation, and bone and joint diseases

TENNESSEE

Portrait of Dr Schmeisser.—A portrait of Dr Harry Christian Schmeisser, a gift of his wife, was presented to the University of Tennessee Medical Units Sept 15 at the new Institute of Pathology in Memphis The portrait commemorates Dr Schmeisser s 30 years of service as professor of pathology and bacteriology and director of the old Institute of Pathology from Sept 1921 to March 1, 1944, and professor of pathology from that date Thomas P Nash Jr , Ph D , dean of the school of biological sciences, presided at the ceremony The presentation address was delivered by Dr Ernest W Goodpasture, professor of pathology and former dean of Vanderbilt University School of Medicine Nashville

VIRGINIA

New State Health Commissioner—Dr Mack I Shanholtz, Wewoka, Okla , has been appointed state health commissioner to succeed Dr Lonsdale J Roper Dr Adrian L Carson Jr has been designated to fill the vacancy created by the resignation of Dr John C Neale Jr , to serve as interim director of the division of local health services until a permanent appointment can be made

Conferences for General Practitioners.—A series of conferences designed especially for general practitioners will be held at the University of Virginia Department of Medicine Charlottesville, during the academic year, 1951 1952 Obstetrics and gynecology in general practice will be the subject of the first conference, Oct 19 20 A conference on the management of common traumatic injuries, will be held Jan 11, 1952, and a conference on infectious diseases April 4, 1952

WISCONSIN

Postgraduate Course in Cardiology—The University of Wisconsin Medical School Madison will present a postgraduate course in cardiology Oct 23 25 under the direction of Dr Herman H Shapiro, associate professor of clinical medicine and chairman of the cardiology section The morning sessions consist of ward rounds and instruction in the interpretation of electrocardiograms and orthodiagrams in small groups under direct supervision The afternoon sessions, lecture type presentations will be held in Building T 14 Registration limited to 20, must be made in advance with Dr Robert C Parkin, 418 N Randall Ave , Madison 6 The fee for the course is $10, payable on Oct 23

GENERAL

Ambulatory Fracture Association Meeting in California.—This association will hold its annual meeting Oct 8-11 at the Arrowhead Springs Hotel in San Bernardino, Calif , under the presidency of Dr Roger A Vargas of San Bernardino A series of 36 papers will be presented at the scientific sessions A fellowship dinner will be held Monday at 7 p m and the annual banquet Thursday at 8 p m

Southwestern Medical Association Meeting—The annual meeting of this association is being held in the Cortez Hotel, El Paso, Texas, Oct 18-20 under the presidency of Dr Louis W Breck of El Paso Speakers include the following

Edgar Burns New Orleans Urologic Problems in Children
Edward H Reinhard St. Louis Radioactive Isotopes in the Diagnosis and Treatment of Malignant Neoplastic Diseases
Elmer C Bartels Boston, Present-day Treatment of Hyperthyroidism
Herbert E Schmitz, Chicago Total Abdominal versus Vaginal Hysterectomy
Edwin H Ellison Columbus Ohio Modern Treatment of Burns
Elexious T Bell Minneapolis Pathology of Glomerulonephritis

International Medical Assembly—This assembly, a postgraduate school of the Interstate Postgraduate Medical Association of North America, will meet in the Public Auditorium in St Louis Oct 22 25 under the presidency of Dr Richard B Cattell, Boston Diagnostic clinics will be held in the morning and early afternoon and will be followed by addresses beginning at 4 p m Scientific papers will be presented during evening sessions also beginning at 7 30 Monday, Tuesday, and Thursday The assembly dinner will be held at the Hotel Jefferson Wednesday evening Both technical and commercial exhibits will be shown The registration fee is $5, except for doctors in uniform, for whom it is $1 A program has been arranged for the doctors' wives

Van Meter Prize Award.—The American Goiter Association again offers the Van Meter Prize Award of $300 and two honorable mentions for the best essays submitted describing original work on problems related to the thyroid gland The award will be made at the annual meeting of the association in St Louis May 1-3, 1952, provided essays of sufficient merit are presented in competition The competing essays may cover either clinical or research investigations, should not exceed three thousand words in length, must be presented in English, and a typewritten double spaced copy in duplicate sent to the Corresponding Secretary, Dr George C Shivers, 100 E Saint Vrain St Colorado Springs, Colo , not later than March 1, 1952 The winning essay will be published in the annual proceedings of the association

Meeting on Surgery of Trauma—The American Association for the Surgery of Trauma will hold its annual session Oct 23-25 at the Seigniory Club, Montreal, Canada, under the presidency of Dr R Arnold Griswold, Louisville Among the 38 papers will be six in a symposium on vascular problems to be presented on Wednesday with Dr Louis G Hermann, Cincinnati, serving as moderator The symposium will close with a round table discussion on vascular injuries and vascular surgery, the participants being Drs Campbell M Gardner, Montreal, Canada, Joseph E Hamilton, Louisville, Gordon Murray, Toronto, Canada, Sam F Seeley, Washington, D C , and John E Webster, Detroit The annual dinner will be held on Wednesday at 8 p m Lionel A Forsyth, president of the Dominion Steel and Coal Corporation of Canada, will be the guest speaker

Study of Air Pollution—An international study of air pollution is being made in the Detroit, Mich -Windsor, Ontario, Canada area at the request of the governments of Canada and the United States The Public Health Service, the Weather Bureau, the state of Michigan and the city of Detroit, and a number of large industries in the region are participating in the study on the United States side The International Joint Commission has established a Technical Advisory Board on Air Pollution to direct field work and plan studies on both sides of the boundary, to review the findings, and to make recommendations to the commission The chairman of the United States section of the Technical Advisory Board is Mr George D Clayton of the Public Health Service, the chairman of the Canadian section of the board, Dr Morris Katz of the Canadian Department of

National Defense, Ottawa The long range objectives of the study are the determination of sources, nature and amounts of atmospheric contaminants resulting from combustion of fuels, sources, nature, and amounts of atmospheric contaminants resulting from industrial processes, effects of local meteorological factors on the dissemination and diffusion of atmospheric contaminants, the effect of the atmospheric contaminants on health, vegetation, safety, and economy, and controls necessary and their cost

Blood Bank Association Meeting —The annual meeting of the American Association of Blood Banks will be held at the Hotel Nicollet in Minneapolis, Oct 22-24 under the presidency of Dr Paul I Hoxworth, Cincinnati Papers will be given on Administrative Aspects in Blood Banking Research in Blood, Practical Aspects of Blood Banking and National Needs for Blood Panel discussions will be given at each morning and afternoon session as follows

Administrative Aspects of Blood James M Potts Dallas Texas moderator Mr William S Kyler Aurora Ill Miss Marjorie Saunders LL B Dallas Texas and Marion Rymer Ph D Denver

Blood Preservation Kenneth M Endicott Bethesda Md moderator Max M Strumia Bryn Mawr Pa John G Gibson Boston Orville F Denstedt Ph D Montreal Canada

Erythroblastosis Fetalis Tibor J Greenwalt Milwaukee moderator Milton S Sacks Baltimore Louis K Diamond Boston Ernest Witebsky Buffalo

Technics in Blood Banking Thomas H Seldon Rochester Minn moderator Malcolm M Hargraves Don R. Mathieson and John E Osborn Rochester Minn Coye C Mason Aurora Ill

National Need for Blood Capt Lloyd R Newhouser MC USN Washington D C moderator John B Alsever Washington D C William G Workman Bethesda Md Douglas Kendrick Rochester Minn and Russell L Haden Crozet Va

The annual banquet will be held at 7 p m Tuesday Both scientific and technical exhibits will be on display

WHO to Purchase DDT for Member States —The World Health Organization has notified interested governments that it is ready to purchase DDT insecticide on their behalf from the priority reservation set aside by the United States for health and agricultural purposes abroad Dr Brock Chisholm, director general, announced that WHO had obtained general export licenses from the United States covering a large group of commodities, including insecticides, for other member governments Under these general export licenses priority assistance for DDT exports from the United States may be obtained immediately on application by WHO and the Pan American Sanitary Bureau, the regional office of WHO in the Americas The United States will grant priority only to orders placed for delivery during the third and fourth quarters of the year at a time when its agricultural requirements are lowest Priority assistance will be given during the first and second quarters of the calender year (January through June) only in cases of clear emergency Member governments are encouraged to obtain their requirements in the United States market for shipment before the end of the year in order to obtain the best prices and avoid conflict with U S domestic requirements Dr Chisholm s letter also states the United States National Production Authority has agreed that it is in the interests of world health, in which the United States is vitally interested, that continuity of public health programs against malaria and yellow fever be maintained

Teaching Mission Goes to Israel and Iran —A medical teaching mission composed of 14 specialists from six different countries has left from Geneva for Israel and Iran the World Health Organization has announced The mission is being carried out at the request of the ministries of health of the two countries to be visited It includes a public health unit which will remain in Israel for two months, clinical and preclinical specialists will go to Iran for three weeks after spending a month in Israel

The mission, which is under the chairmanship of Dr Leo M Davidoff, professor of neurosurgery of New York University, is a joint project of *WHO and the Unitarian Service* Committee Both organizations have sponsored similar projects in the past, including missions to Columbia Finland, Germany, Greece, Japan, Poland, and the Philippines, but this is the first one to go to the Eastern Mediterranean region and also the first of such size and scope In addition to the public health unit, which is under the direction of Dr Karl Evang, surgeon general of public health of Norway, it includes specialists in physiology, biochemistry, pathology, pediatrics, surgery, radiology, anesthesiology, preventive medicine, and sanitary engineering

Members of the mission are Dr Gordon Kenneth Moe, Syracuse, N Y, Dr Hugo Theorell, Stockholm, Sweden Dr Paul Klemperer, New York, Dr Erik Warburg, Copenhagen, Denmark, Dr Samuel Z. Levine, New York, Dr Carl Semb, Oslo, Norway, Dr Leo M Davidoff, New York, Dr H Osmond Clarke, London, Dr Leo G Rigler, Minneapolis, Dr Lucien E Morris, Iowa City, Dr Edward Grzegorzewski, Geneva, Switzerland, Dr Karl Evang, Oslo, Norway, Dr John E Gordon, Boston and Prof Richard G Tyler, Seattle

Marriage Rates and World War II.—The soaring marriage rates which followed World War II throughout much of the world have now declined to approximately prewar levels, according to the Metropolitan Life Insurance Company s statisticians In reporting on the extent to which World War II has influenced marriage rates during the past decade, the statisticians note that the changes varied from country to country, with the most pronounced effects felt in the occupied nations and in those belligerents actively engaged in hostilities In the neutrals, on the other hand, there was relatively little change From 1939 to 1942 the English speaking nations experienced a high point in the number of marriages which was followed by a decline for two or three years Termination of the conflict, however brought a new high, the peak occurring in 1945 in the British Isles and the following year in the United States, Canada, Australia and New Zealand In this country the rate of 16 2 marriages per 1,000 population attained in 1946 was not only the highest in nation s history, but also higher than that of any other country in the postwar period The rate of marriages fell off greatly in the occupied countries of Europe during the later years of the war In some as Belgium, France, Italy Luxembourg, and Romania, it was continually below the prewar level with 5 marriages per 1,000 population not uncommon However, in almost every case the end of the struggle brought a sharp upturn, and in some instances, especially France, the number of marriages remains much higher today than in the prewar period It is likely that the decline in marriage rates will continue during the next few years, according to the statisticians, because we are entering the period in which effects of the low birth rate during the depression years will be shown in fewer people at taining marriageable age

International Tuberculosis Campaign —Since the end of World War II the International Tuberculosis Campaign has directed and coordinated in 23 countries the tuberculin testing of 36 million children and adolescents and the vaccination of 16 million of that number with BCG (Bacillus Calmette Guérin) Further plans are now in progress for the continuation of the campaign in the participating countries and for its extension to other lands and peoples Started at the close of the war by the Danish Red Cross Society, which introduced mass BCG vaccination in several European countries as an emergency measure against tuberculosis the campaign was carried out until July 1 through the united effort and support of the Scandinavian voluntary societies and the United Nations International Children s Emergency Fund with the cooperation of the World Health Organization It is being continued by UNICEF and WHO which established in February, 1949, a Tuberculosis Research Office in Copenhagen, Denmark, to evaluate the results of the campaign The Tuberculosis Research Office has cooperated with certain countries in a long range evaluation program Punch card copies of all vaccination records including both the tested and the vaccinated are made to form a national register which would permit direct matching of current tuberculosis morbidity and mortality among the vaccinated group as against those occurring among the natural reactors to tuberculin, or the expected trends in the general population based on pre vaccination experiences Denmark and Finland have begun evaluation studies

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States in the weeks ended as indicated

Area	Sept 22 1951	Sept 15 1951	Sept 23 1950
New England States			
Maine	2	5	6
New Hampshire	4	4	
Vermont	2		6
Massachusetts	9	26	48
Rhode Island	1	1	7
Connecticut	14	18	32
Middle Atlantic States			
New York	121	132	330
New Jersey	41	51	65
Pennsylvania	64	54	110
East North Central States			
Ohio	69	80	143
Indiana	31	25	42
Illinois	116	132	132
Michigan	99	110	139
Wisconsin	151	100	77
West North Central States			
Minnesota	41	47	40
Iowa	34	21	137
Missouri	55	79	37
North Dakota	5	9	2
South Dakota	7	14	16
Nebraska	38	38	30
Kansas	58	57	28
South Atlantic States			
Delaware			4
Maryland	4	11	71
District of Columbia	1	3	10
Virginia	20	14	75
West Virginia	9	10	31
North Carolina	11	18	53
South Carolina	4	17	17
Georgia	24	29	29
Florida	4	10	17
East South Central States			
Kentucky	12	21	40
Tennessee	59	84	27
Alabama	24	20	7
Mississippi	59	26	22
West South Central States			
Arkansas	24	25	21
Louisiana	47	52	21
Oklahoma	33	34	16
Texas	73	87	74
Mountain States			
Montana	28	11	3
Idaho	6	6	7
Wyoming	9	26	
Colorado	41	67	5
New Mexico	8	6	3
Arizona	14	11	7
Utah	26	49	6
Nevada	5	4	
Pacific States			
Washington	30	22	33
Oregon	17	14	40
California	172	158	85
Territories and Possessions			
Alaska	5		3
Hawaii		1	1
United States	1 751	1 708	2 173

Note—Iowa reported 22 delayed September cases—not allocated to specific weeks

Additions for week ending Sept 15 Virginia 17 cases delayed report—not allocated to specific weeks Nevada 2 cases for week ended Sept 8

FOREIGN

Plague Epidemic Fading in Yemen.—A preliminary survey of over 60 villages in the Saada region of Khawlan a province of Yemen on the Saudi Arabian border, has revealed only 12 cases of bubonic plague and one of pneumonic plague The report came from Dr Hafez Amin Bey World Health Organization medical consultant who was sent to investigate a reported epidemic of plague on the request of the government of Yemen In the opinion of Dr Amin the epidemic which began around March 1 is now fading It had stopped in some villages even before the arrival of the WHO team There were no traces of it in Yemenite ports and authorities reported that all rats caught in Aden on Yemenite ships were completely free from the disease As a result of his investigations Dr Amin in consultation with the government health authorities at Aden has worked out a plan for surveillance of the infected area and full reporting of new cases He will continue his own work in the field, as well as analyzing and coordinating the reports of teams in the mountains

LATIN AMERICA

Yellow Fever Outbreak in Costa Rica—Dr Fred L Soper, director of the Pan American Sanitary Bureau, Regional Office of the World Health Organization Washington, D C, went to Costa Rica in mid September to consult with public health officials regarding the outbreak of yellow fever in jungle areas of that Central American republic The Costa Rican Government by mid September had reported 25 cases confirmed by laboratory analysis, and 24 deaths since the outbreak occurred three months previously The cases are located in jungle areas of three provinces Alajuela, Heredia and Limon Up to Sept 6 Costa Rican public health authorities had vaccinated some 50,000 persons in the infected and adjacent districts According to official reports, the urban vector of yellow fever, the Aedes aegypti mosquito, is no longer found anywhere in the republic It is transmitted, however, in jungle areas It has been found impossible to eliminate yellow fever from such jungle areas, particularly because monkeys are also infected, vaccination is the only adequate control measure The present outbreak indicates the presence of the virus in the jungle areas of this hemisphere Cases were reported in Panama some months prior to the current outbreak in Costa Rica, just south of the border of the latter republic At that time the Costa Rican government initiated its present vaccination campaign with the assistance of the PASB The presence of the virus in certain jungle spots of southeastern Mexico (State of Chiapas) recently has been detected through laboratory studies of monkeys blood serum

The current outbreak emphasizes the need for continuing without interruption the continent-wide program for the complete eradication of the Aedes aegypti, which still occurs in certain urban areas as far north as the southern part of the United States This program, approved by the Pan American Sanitary Organization, is being carried on by the Latin American governments, with the assistance of PASB and other international organizations, in order to prevent the spread of the disease to cities, towns, and rural communities, where it might assume epidemic proportions

CORRECTION

Orthopedics and Industry.—In the Correspondence section of *The Journal*, Sept 15, page 275, the following material should be substituted for the first four lines of the next to the last paragraph of the letter by Dr M H Manson

"The booklet referred to in Dr Billig s recent article was a brochure entitled Thirty Days Hath September,' which deals specifically with menstruation In June, 1945 at a Bell System Medical Directors Conference, the contents of this brochure were discussed, also the then existing reports on the Billig exercises "

MEETINGS

American Medical Association Clinical Session Los Angeles Dec 4-7 Dr George F Lull 535 N Dearborn St Chicago 10 Secretary

Ambulatory Fracture Association Arrowhead Springs Hotel San Bernardino Calif Oct. 8 11 Dr H W Wellmerling 626 Griesheim Bldg Bloomington Ill Secretary

American Academy of Ophthalmology and Otolaryngology Chicago Oct 14-18 Dr W L. Benedict, 100 First Avenue Bldg Rochester Minn Executive Secretary

American Academy of Pediatrics Toronto Canada Oct. 20-25 Dr E. H Christopherson 636 Church St. Evanston Ill Executive Secretary

American Association for the Surgery of Trauma The Seigniory Montebello Quebec Canada Oct. 23 25 Dr Charles G Johnston 1512 St. Antoine St. Detroit 26 Secretary

American Association of Blood Banks Hotel Nicollet, Minneapolis, Oct 22 24 Miss Marjorie Saunders 3301 Junius St. Dallas 1 Texas, Secretary

American Cancer Society New York Oct 25 Dr Charles S Cameron, 47 Beaver St., New York Medical Director

American Clinical and Climatological Association Skytop Pa., Nov 5-7 Dr Marshall N Fulton 124 Waterman St Providence R. I Secretary

American College of Surgeons Fairmont Hotel San Francisco Nov 5-9 Dr Michael L Mason 40 E Erie St Chicago 11 Secretary

American Public Health Association Civic Auditorium San Francisco, Oct. 29 Nov 2 Dr Reginald M Atwater 1790 Broadway New York 19, Executive Secretary

American Society for the Study of Arteriosclerosis Chicago Nov 4-5 Dr O J Pollak Quincy City Hospital Quincy 69 Mass Secretary

American Society of Anesthesiologists Washington, D C, Nov 5-8 *Dr J Earl Remlinger Jr 188 W Randolph St Room 909 Chicago 1,* Secretary

American Society of Clinical Pathologists, Chicago Oct. 15 20 Dr Clyde G Culbertson 1040 W Michigan St. Indianapolis 7 Secretary

American Society of Tropical Medicine Congress Hotel Chicago Nov 15 17 Dr Quentin M Geiman 25 Shattuck St, Boston 15 Secretary

Association of American Medical Colleges French Lick Springs Hotel French Lick Ind Oct. 29-31 Dr Dean F Smiley 185 N Wabash Ave Chicago 1 *Secretary*

Association of Life Insurance Medical Directors of America New York Oct 11 12 Dr Henry B Kirkland P O Box 594 Newark 1, N J, Secretary

Association of Military Surgeons of the United States Palmer *House, Chicago Oct 8 10 Colonel James M Phalen* Armed Forces Institute of Pathology Washington 25 D C Secretary

Association of State and Territorial Health Officers Washington D C *Nov 26-30 Dr John D Porterfield 306 Ohio Depts Bldg* Columbus 15 Ohio Secretary

Central Neuropsychiatric *Association Hotel Nicollet Minneapolis* Oct 19 20 Dr Lee M Eaton 102 Second Ave S W Rochester Minn. Secretary

Central Society for Clinical Research Drake Hotel Chicago Nov 2 3 Dr Kenneth G Kohlstaedt 960 Locke St Indianapolis 7 Secretary

College of American Pathologists Chicago Oct 15 16 Dr Tracy B Mallory Massachusetts General Hospital Boston Secretary

Delaware, Medical Society of Wilmington Oct. 8 10 Dr Andrew H. *Gehret, 1007 Park Place Wilmington Secretary*

Gulf Coast Clinical Society Edgewater Gulf Hotel Edgewater Park Miss Oct 18 19 Dr C D Taylor 113 Davis Ave Pass Christian Miss Secretary

Indiana State Medical Association Indianapolis Oct 29 31 Miss *Lucille Kribs 23 E Ohio St Indianapolis 4 Acting Secretary*

Interstate Post Graduate Medical Association of North America, St Louis, Oct 22 26 Dr Tom B Throckmorton Equitable Bldg. Des Moines Iowa *Secretary*

Midwest Regional Meeting American College of Physicians Columbus Ohio Oct 13 Dr B K Wiseman Kinsman Hall Ohio State University Columbus 10 Ohio Chairman

National Association of Clinic Managers Buena Vista Hotel Biloxi Miss Oct. 29 31 Mr Floyd R. Detert *Marshfield Clinic, Marshfield* Wis Secretary

North Pacific Surgical Association Vancouver B C Canada Nov 16-17 Dr J A Duncan 509 Olive Way, Seattle Wash Secretary

Oklahoma City Clinical Society Biltmore Hotel Oklahoma City Oct 29-Nov 1 Mrs Muriel R. Waller 612 Medical Arts Bldg. Oklahoma City Executive Secretary

Omaha Mid West Clinical Society Hotel Paxton Omaha Oct. 29 Nov 2. *Dr L. E. Moon, 1031 Medical Arts* Bldg, Omaha 2 Secretary

Oregon State Medical Society Masonic Temple Portland Oct. 10-13 Dr Robert F Miller, 833 S W Eleventh Ave Portland 5 Secretary

Southern *Medical Association* Dallas Texas *Nov* 5-8 Mr C. P Loranz, 1020 Empire Bldg Birmingham 3 Ala Secretary

Southwestern *Medical Association El Paso Texas Oct. 18 20 Dr* W W Schuessler 1415 First National Bank Bldg El Paso Texas, Secretary

Virginia Medical Society of Virginia Beach Oct 7 10 Mr Richard H Nash 1105 W Franklin St Richmond Executive Secretary

Western Surgical *Assocation Broadmoor Hotel Colorado Springs* Colo Nov 29 Dec 1 Dr Michael L. Mason 154 Erie St Chicago 11 Secretary

INTERNATIONAL

Australasian Medical Congress Melbourne Victoria Australia Aug 22 30 Dr C H *Dickson Medical* Society Hall 426 Albert St East Melbourne Victoria Australia Hon General Secretary

Commonwealth and Empire Health and *Tuberculosis* Conference Central Hall, London, England, July 8 13 Dr J H Harley Williams Tavistock House North, Tavistock Sq, London W C 1 England, Secretary General.

Inter American Congress of Surgery Buenos Aires, Argentina Oct. 1-6

International Congress on Mental Health Mexico City Mexico Dec. 11 19 Mrs Grace E. O Neill Division of World Affairs, National Association on Mental Health 1790 Broadway New York 19, N Y

International Congress *on Neuropathology Rome Italy Sept. 8-13* Dr Armando Ferraro 722 W 168th St New York N Y U S. A. Secretary General

International Congress of Physical Medicine, London England July 14 19 Dr A C Boyle 45 Lincoln s Inn Fields London W C 2, England Hon. Secretary

Pan American Congress of Ophthalmology Mexico City Mexico Jan. 6-12. Dr Luis Sanchez Bulnes Gomez Farias 19, Mexico 4 D.F., Secretary-General.

Pan American Congress of *Pediatrics Montevideo Uruguay* Dec. 5-8. Dr Maria Luisa Saldien de Rodriguez, Avenida 18 de Julio 1246, *Montevideo Uruguay General Secretary*

Pan Pacific Surgical Association Congress Honolulu, Hawaii Nov 7 19 Dr Forrest J Pinkerton Suite 7 Young Bldg. Honolulu, Hawaii, President.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology *Oral* Memphis Oct. 14-17 Sec, Dr Curtiss B Hickcox 80 Seymour St Hartford 15 Conn

American Board of *Dermatology and Syphilology Written* Chicago March 1952 *Oral* Chicago May 1952 Final date for filing application is Feb 1 1952. Sec Dr George M. Lewis 66 E 66th St., New York 21

American Board of Internal Medicine *Written.* Various centers, Oct. *15 Final date for filing applications was May 1 Oral The schedule of* oral examinations for 1951 has been arranged on a regional basis as *follows New York Nov 12 15 covering Maine Massachusetts New* Hampshire, New York and Vermont San Francisco Oct. 22 24 *covering Arizona California Colorado Idaho Montana Nevada New* Mexico Oregon Utah Washington and Wyoming. *Final date for filing applications was Sept. 1*

Oral examinations in the subspecialties will be held at the same time and place and on the same distribution.

Exec Sec Dr William A. Werrell 1 W Main St Madison 3

American Board of Neurological Surgery *Oral* Chicago Oct. 25 26 *Oral* Chicago *May 1952. Final date for filing applications for the May* 1952 examination is Jan 1 1952. Sec Dr W J German 789 Howard *Ave, New Haven 4 Conn.*

American Board of Obstetrics and Gynecology *Written.* Feb 1 1952. Final date for filing applications is Nov 1 *Oral* Chicago June 7 13 1952 Final date for filing application is Feb 1 1952. Sec Dr Robert L. Faulkner 2105 Adelbert Road Cleveland 6.

American Board of Ophthalmology *Written* Twenty five centers, Feb 4-5, 1952 *Oral* Chicago October 8 13 Sec. Dr Edwin B Dunphy 56 *Ivie Road* Cape Cottage, Maine.

American Board of Orthopaedic Surgery Final date for filing applications for the 1952 Part II examinations is Nov 30 1951 Sec Dr Harold A Sofield 122 S Michigan Ave Chicago 3

American Board of Otolaryngology *Oral* Chicago Oct. 8-12 Sec Dr Dean M Lierle University *Hospital* Iowa City

American Board of Pediatrics *Oral* Buffalo Oct 26-28 Ex. Sec., Dr John McK Mitchell 6 Cushman Rd Rosemont Pa.

American Board of Plastic Surgery Denver Oct 27 29 Final date for filing *of case reports was Aug 30 Sec Dr* Bradford Cannon Office of the Board 4647 Pershing Ave, St. Louis 8

American Board of *Preventive* Medicine *Written. San Francisco October 28 Oral* San Francisco October 29 Sec. Dr Ernest L. Stebbins 615 North Wolfe St. Baltimore 5

American Board of Proctology Philadelphia Nov 17 18 Sec Dr Louis A Buie 102 110 Second Ave. S W Rochester Minn

Amercian Board of *Psychiatry* and Neurology *Oral* New York Dec 17 18 Final date for filing applications *was Sept. 1 Act. Sec Dr David* A. Boyd *Jr 102 110 Second Ave* S W Rochester Minn.

American Board of Surgery *Written.* Various centers Oct. 1951 Final date for filing applications *was July 1 Written.* Various Centers. March 1952. Final date for filing application is Dec 1 1951 Sec Dr J Stewart Rodman 225 S 15th St. Philadelphia.

Board of Thoracic Surgery *Oral* St. Louis Nov 2 Sec Dr William M. Tuttle, 1151 Taylor Ave Detroit 2 Mich

American Board of Urology Chicago Feb 9 13 1952. Final date for filing applications is Sept. 1 Sec Dr *Harry Culver* 30 Westwood Rd, Minneapolis 16

DEATHS

Reed, Alfred Cummings ⊕ Mill Valley, Calif , born in Pleasant Hill Mo Dec 2, 1884, University and Bellevue Hospital Medical College New York, 1910, diplomate of tropical medicine and hygiene, London School of Tropical Medicine and Hygiene, 1928, assistant surgeon U S Public Health Service from 1911 to 1913 and physician for Yale Hospital at Changsha, China, from 1913 to 1915 from 1916 to 1928 associate professor of medicine at Stanford University School of Medicine, in San Francisco, where since 1942 he was associate clinical professor of medicine, from 1928 to 1942 professor of tropical medicine and head of the Pacific Institute of Tropical Medicine at the University of California Medical School, served during World War I, specialist certified by the American Board of Internal Medicine, past president of the American Society of Tropical Medicine, of which he had been councilor and secretary treasurer, councilor of the American Academy of Tropical Medicine from 1937 to 1942, secretary for the United States of the Royal Society of Tropical Medicine and the Far Eastern Association of Tropical Medicine, member of the American Association for the Advancement of Science, Pasteur Society, Phi Beta Kappa, Delta Omega, Sigma Xi, and Phi Beta Pi consultant on tropical medicine at Children's, Chinese, Mount Zion, and Marine hospitals, all in San Francisco, served as consultant and branch chief of tropical medicine for the Veterans Administration editor of the *California State Medical Journal* from 1917 to 1922 and formerly editor of Health for Travelers', author of Tropical Medicine in the United States , co author of Handbook of Tropical Medicine' received the honorary doctor of science degree from Pomona College in Claremont, Calif in 1935, died June 20, aged 66, of adenocarcinoma of the colon

Anspach, Brooke M ⊕ Ardmore, Pa , born in Reading Pa , March 3, 1876, University of Pennsylvania Department of Medicine Philadelphia 1897, formerly on the faculty of his alma mater, professor emeritus of gynecology at Jefferson Medical College of Philadelphia specialist certified by the American Board of Obstetrics and Gynecology, counsellor, American Gynecological Club member of the American Gynecological Society, of which he had been past president and treasurer, fellow of the American College of Surgeons and member of the board of governors, fellow of the College of Physicians of Philadelphia, an Associate Fellow of the American Medical Association and from 1912 to 1917 secretary of the Section on Obstetrics Gynecology and Abdominal Surgery, and chairman 1917 1918, served on the staffs of the Philadelphia General Hospital, Stetson Hospital, Jefferson Medical College Hospital in Philadelphia and Bryn Mawr (Pa) Hospital, in 1936 awarded an honorary degree of doctor of science from Lafayette College in Easton and awarded the same degree from Jefferson in 1946 author of a book entitled "Gynecology , died July 8, aged 75

Landry, Jerome Emanuel ⊕ New Orleans born in New Orleans Aug 6, 1881 Medical Department of Tulane University of Louisiana, New Orleans, 1908 member of the Southeastern Surgical Congress Southern Medical Association and the Catholic Physicians Guild second vice president of the Orleans Parish Medical Society in 1920 and its third vice president in 1925 served as first vice president of the Louisiana State Medical Society Louisiana Surgical Society, and the New Orleans Graduate Medical Assembly fellow of the American College of Surgeons formerly on the teaching staff of the Tulane Post Graduate School of Medicine serving in the capacity of assistant professor of operative and clinical surgery chief of the surgical division and senior visiting surgeon at the Charity Hospital consultant in gynecology and obstetrics at the New Orleans Dispensary for Women and Children and was a visiting surgeon of Hotel Dieu where he had been president of the staff died July 14 aged 69, of coronary occlusion

Hartwell, Samuel Willard, Lansing, Mich , born in New Hampton, Ia , Sept 20, 1882, State University of Iowa College of Medicine, Iowa City, 1906, specialist certified by the American Board of Psychiatry and Neurology, emeritus professor of psychiatry at the University of Buffalo School of Medicine in Buffalo, N Y , member of the American Psychiatric Association and the American Orthopsychiatric Association, of which he had been president served overseas during World War I, director of the outpatient department of Worcester State Hospital and the Child Guidance Clinic in Worcester, Mass , from 1929 to 1935, formerly director of the Child Guidance Clinic in Grand Rapids, Mich , assistant director of the state department of mental health, author of 'Practical Psychiatry and Mental Hygiene' and A Citizens Handbook of Sexual Abnormalities and the Mental Hygiene Approach to Their Prevention", died July 30, aged 68, of coronary occlusion

Haney, William Porter ⊕ Omaha, born in Omaha Feb 5, 1877, Rush Medical College, Chicago, 1901, an Associate Fellow of the American Medical Association, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, assistant professor emeritus, otorhinology, at the University of Nebraska College of Medicine, affiliated with Creighton Memorial St Joseph s Hospital, University of Nebraska Hospital, St Catherine s Hospital, and the Bishop Clarkson Memorial Hospital, where he died July 19 aged 74, of heart disease

Reineking, Walter Clarence, Jacksonville, Ill , born in Franklin Wis , March 10, 1881 Wisconsin College of Physicians and Surgeons Milwaukee, 1907, member of the American Medical Association, American College of Chest Physicians, and the American Trudeau Society, superintendent and medical director of the Morgan County Tuberculosis Sanatorium, at one time medical director and superintendent of the Rockford (Ill) Municipal Sanatorium, on the staff of Passavant Memorial Hospital, died in Madison General Hospital, Madison, Wis , July 11, aged 70, of extensive cerebral contusions as the result of an automobile accident

Jewett, David Baldwin, Rochester, N Y , born in Rochester, May 29, 1880, New York Homeopathic Medical College and Hospital, New York, 1902, member of the American Medical Association, past president of the Rochester Academy of Medicine, served during World War I, associated with Genesee Hospital since he served his internship there, and completed twenty five years service as chief of the medical service in 1946 when he was named emeritus director of medicine, received the honorary degree of master of science from Trinity College Hartford, Conn , died July 12 aged 71, of coronary thrombosis

Shupe, Thomas Pollock, Delray Beach, Fla born in Cannonsburg, Pa , Aug 8 1886 Western Reserve University Medical Department Cleveland, 1911, specialist certified by the American Board of Urology, member of the American Association of Genitourinary Surgeons and the American Urological Association, fellow of the American College of Surgeons, served during World War I, formerly practiced in Cleveland, where he was affiliated with St Luke s and Lutheran hospitals served as secretary of the Cleveland Medical Library Association, died in West Palm Beach July 9, aged 64, of coronary thrombosis

Birdsall, Joseph Cooper ⊕ Philadelphia, born in 1882, University of Pennsylvania School of Medicine, Philadelphia, 1911 specialist certified by the American Board of Urology, member of the American Urological Association, fellow of the American College of Surgeons governor and past president of the Medical Club of Philadelphia professor of urology at the Medico-Chirurgical College Graduate School of Medicine, University of Pennsylvania consulting chief urologist at the Presbyterian Hospital consulting urologist for the Pennsylvania Railroad, died while playing golf in Scranton June 30, aged 68

⊕ Indicates Fellow of the American Medical Association.

Armstrong, Carroll D., ⊕ Salina, Kan , Chicago Homeopathic Medical College 1903, served on the staffs of the Ellsworth (Kan) County Veterans Memorial Hospital and St John's Hospital, died July 11, aged 70, of coronary heart disease and arteriosclerosis

Bagby, Harold James ⊕ Coffeyville, Kan , Northwestern University Medical School, Chicago, 1920 for many years president of the school board and chief surgeon for the Missouri Pacific Railroad, on the staff of Coffeyville Memorial Hospital, where he died July 6, aged 56, of uremia, malignant hypertension and cerebral thrombosis

Behle, Augustus Calvin, Long Beach, Calif , Rush Medical College, Chicago, 1894, member of the American Medical Association and in 1907 a member of its House of Delegates, fellow of the American College of Surgeons honorary life member and past president of the Utah State Medical Association formerly practiced in Salt Lake City, where he was affiliated with St Mark s Hospital, died in July, aged 80

Bennett, Edmund Francis Jr , Escondido, Calif , University of Illinois College of Medicine, Chicago, 1925, at one time practiced in Chicago, died in the U S Naval Hospital, San Diego, July 5, aged 50 of intestinal giant cell lymphoma

Bessie, Abraham ⊕ New York, Columbia University College of Physicians and Surgeons, New York, 1911, affiliated with St Elizabeth's Hospital in New York died in Glen Cove, L I, July 17, aged 64 of heart disease

Bresnick, Nathan T , ⊕ Boston, Tufts College Medical School, Boston, 1927, assistant in medicine from 1931 to 1936 and instructor in medicine from 1936 to 1950 at his alma mater, affiliated with Boston City and Beth Israel hospitals died July 8 aged 47, of heart disease

Brooks, Arbie LeRoy ⊕ Pontiac Mich , University of Colorado School of Medicine, Denver, 1928, member of the Industrial Medical Association, medical director of the Fisher Body Plant, on the staffs of St Joseph s Hospital and Pontiac General Hospital where he died July 12, aged 61, of coronary thrombosis

Buckley, Madison Henry, Martin, Tenn University of Tennessee College of Medicine Memphis, 1930 member of the American Medical Association, served during World War II, affiliated with Obion County General Hospital in Union City, died in Baptist Memorial Hospital, Memphis July 14, aged 53, of injuries received in an automobile accident

Buckmiller, Frank Charles ⊕ Bridgeport, Conn , University of Vermont College of Medicine, Burlington, 1914, examining physician with the State Athletic Commission, died July 7, aged 62, of coronary thrombosis

Calhoun, Audley Herbert, Phoenix, Ariz Starling Medical College, Columbus, 1906, member of the American Medical Association and the Ohio State Medical Association, died July 9, aged 71, of coronary occlusion

Cash, Stanmore Langford ⊕ New York, University and Bellevue Hospital Medical College New York, 1899, clinical professor of gastroenterology, New York Polyclinic Medical School and Hospital, died July 6 aged 77, of coronary arteriosclerosis

Catlin, Sanford Robinson ⊕ Rockford Ill , Harvard Medical School, Boston, 1897 an Associate Fellow of the American Medical Association, fellow of the American College of Surgeons, served during World War I member and past president of the staff, Rockford Memorial Hospital, where he died July 14 aged 79, of cerebral hemorrhage

Coats, Albert James ⊕ Boise Idaho Northwestern University Medical School, Chicago, 1907, during World War II received a citation from President Roosevelt for his services in the Red Cross, affiliated with St Luke s and St Alphonsus hospitals accidentally drowned in Henry s Lake, Staley Springs, July 1, aged 76

Coleman, Luther Shannon, Theodore Ala , (licensed in Alabama in 1909), member of the American Medical Association, died June 10 aged 73 of coronary occlusion

Comfort, Clifford Vinal Craig ⊕ Rochester, N Y University of Buffalo School of Medicine, 1897, for many years coroner s physician for Monroe County, served on the staff of Park Avenue Hospital and the Monroe County Infirmary, died in Park view Sanatorium July 16, aged 81, of cerebral hemorrhage

Cooper, Charles Miner, San Francisco, University of Edinburgh Faculty of Medicine, Scotland, 1897, clinical professor of medicine, emeritus, Stanford University School of Medicine, formerly on the staff of the University of California Medical School, died in Stanford University Hospitals July 9, aged 77, of ruptured aneurysm of the aorta

Corrado, Alfred Blaise ⊕ Brooklyn, Long Island College of Medicine, Brooklyn, 1931, affiliated with St Mary s Hospital, where he died July 15, aged 45, of bronchopneumonia and chronic nephrosis

Counts, Herbert Walter, Jacksonville, Fla , Vanderbilt University School of Medicine, Nashville, Tenn , 1911, member of the American Medical Association, died July 4, aged 67, of cerebral thrombosis

Coyle, William Joseph ⊕ Louisville, Ky ; University of Louisville School of Medicine, 1939, member of the Southeastern Surgical Congress, fellow of the American College of Surgeons, on the staffs of St Joseph Infirmary, Kentucky Baptist, St Anthony and SS Mary and Elizabeth hospitals, died July 3, aged 41, of an accidental overdose of barbiturate

Crumrine, Ralph Milton ⊕ Los Angeles, Harvard Medical School, Boston, 1925, member of the American Society of Clinical Pathologists, died July 10, aged 63, of coronary occlusion

Davis, John Morgan, Tarkio, Mo , University of Missouri School of Medicine, Columbia, 1885, for many years county physician, died June 30, aged 88, of cerebrovascular accident

Day, Charles Alvin, Ashley, Ohio, Ohio Medical University, Columbus 1904, died in Galion June 1, aged 81, of cerebral thrombosis and pneumonia

Durham, Clarence Judson ⊕ Muskegon, Mich , Chicago Homeopathic Medical College, 1902 for many years affiliated with Mercy and Hackley hospitals, where he died July 10, aged 74 of uremia

Ellis, Charles A , Denver, Colo , Kentucky School of Medicine, Louisville, 1898 died July 8, aged 89, of a cardiac infarct

Estes, Neal D., Tulsa Okla , (licensed in Arkansas in 1903), served during the Spanish American War, died in the Veterans Administration Hospital, Muskegee, June 10, aged 73 of cerebrovascular accident.

Fishburne, Skottowe Bellinger, Columbia, S C , Medical College of the State of South Carolina, Charleston, 1900, member of the American Medical Association for many years an examiner for the Veterans Administration, served during World War I, formerly city health officer and county physician for many years a trustee at his alma mater died in the Veterans Administration Hospital July 7, aged 76, of hypertensive heart disease

Friesen, Henry J ⊕ Glendale Calif , Northwestern University Medical School, Chicago, 1910 specialist certified by the American Board of Otolaryngology, fellow of the American College of Surgeons, past president of the Glendale Branch of the Los Angeles County Medical Society, on the staffs of Behrens Memorial Hospital and Glendale Sanitarium and Hospital, died July 6, aged 71, of ventricular fibrillation

Frye, Oscar Blaine, Grand Rapids, Mich Detroit College of Medicine, 1907, at one time city bacteriologist and assistant city health officer, died July 9, aged 65, of coronary thrombosis

Garrett, John Abner, Meigs, Ga , Atlanta College of Physicians and Surgeons, 1906 member of the American Medical Association, died June 5, aged 71, of coronary occlusion

Gilbert, Frederick James Simpson, Columbia, S C Medical Department of Tulane University of Louisiana, New Orleans, 1891, died in Providence Hospital July 11, aged 87, of bronchopneumonia

Gribble, Le Grande G., Pomeroy, Ohio Medical College of Ohio, Cincinnati 1896 member of the American Medical Association died June 2, aged 76, of complications as the result of a fall

Grimes, William Lawrence, Winston Salem, N C Johns Hopkins University School of Medicine, Baltimore 1910 member of the American Medical Association consulting surgeon at City Memorial Hospital died July 9 aged 66, of bronchopneumonia

Grove, Charles Edward, Spokane Wash Hahnemann Medical College and Hospital of Philadelphia 1889 member of the American Medical Association served on the staff of St Luke s Hospital died in Sacred Heart Hospital July 10 aged 87, of cerebral thrombosis

Hadden, Claude Eugene, Indianapolis, Indiana University School of Medicine Indianapolis, 1925, member of the American Medical Association at one time deputy coroner of Marion County served as physician to the State Athletic Commission, affiliated with Methodist Hospital and St Vincent s Hospital where he died June 20, aged 54, of coronary occlusion

Hall, Price Barringer ⊕ Columbia, S C , North Carolina Medical College, Davidson, 1903 served during World War I, for many years affiliated with the Veterans Administration regional office died in Alachua General Hospital Gainesville Fla , June 29, aged 71, of coronary thrombosis

Harper, Daniel Luther, Meridian Miss Medical College of Alabama, Mobile, 1906, died in Riley's Hospital June 29, aged 69, of arteriosclerosis and myocardial failure

Hellebrandt, Frank J , St Petersburg Fla College of Physicians and Surgeons of Chicago, 1895, died in the Medical College of Virginia Hospital, Richmond, July 8, aged 81, of coronary occlusion

Hotz, John William ⊕ St Louis, St Louis University School of Medicine, 1925, fellow of the American College of Surgeons, instructor in surgery at his alma mater served during World War I surgeon Deaconess Hospital and St Mary s Group of Hospitals died in Deaconess Hospital June 26 aged 51, of pulmonary infarct

Howe, Charles Lester, Mercer, Pa , Kentucky School of Medicine, Louisville, 1893, member of the American Medical Association, on the staff of the Mercer Cottage Hospital vice president of the board of trustees of the Farmers National Bank, died July 7, aged 85, of myocardial degeneration

Judy, William John ⊕ Parkersburg W Va , Medical College of Virginia, Richmond, 1904 also a Baptist minister, honorary member and formerly vice president of the Parkersburg Academy of Medicine, died July 6 aged 73 of coronary thrombosis

Karr, Herbert Stanley ⊕ Detroit, Detroit College of Medicine, 1908, affiliated with Harper Hospital and the Florence Crittenton Hospital, where he died June 12, aged 68 of carcinoma

Knight, J Oliver ⊕ Louisville Ky Louisville (Ky) Medical College 1907 affiliated with Kentucky Baptist and Deaconess hospitals and Norton Memorial Infirmary, an honorary member of the staff of St Anthony Hospital, medical examiner for Selective Service during World Wars I and II died June 23, aged 66, of cardiovascular disease and diabetes mellitus

Krueger, William F., Milwaukee, Marquette University School of Medicine, Milwaukee 1913, member of the American Medical Association died in St Joseph s Hospital June 6, aged 72, of carcinoma of the stomach

Lee, Allen Hays, Terre Haute, Ind Indiana University School of Medicine Indianapolis 1926 member of the American Medical Association on the staff of Union and St Anthony s hospitals died in Flower and Fifth Avenue Hospitals in New York July 1 aged 56 of hypertension

Levda, Paul Leighton, Englewood Colo Jefferson Medical College of Philadelphia 1909 at one time practiced in Frederick, where he was mayor and president of the school board veteran of the Spanish American War and World War I died in the Veterans Administration Hospital, Fort Logan July 6 aged 71, of cerebral hemorrhage

McCaskill, Melvin Edgar, Little Rock, Ark , St Louis University School of Medicine, 1905 associate professor of gynecology at University of Arkansas School of Medicine, member of the American Medical Association, past president of the Arkansas Medical Society, the Pulaski County Medical Society, and the Arkansas State Board of Health, affiliated with St Vincent Infirmary and Arkansas Baptist Hospital, died July 9, aged 69, of cerebral hemorrhage and peptic ulcer

Mahady, Stephen Augustus, Utica, N Y Baltimore Medical College, 1902, member of the American Medical Association, served during World War I at one time practiced in Waterville, N Y , where he was county coroner formerly deputy health officer, on the staff of St Elizabeth Hospital, supervisor of medical inspection in Utica schools, died June 19, aged 73, of coronary thrombosis

Marsh, Francis Aloysius, Salt Lake City St Louis University School of Medicine, 1927, served during World War I, formerly affiliated with the Indian Service, died July 19, aged 52

Mayer, Edward Anton, Kaukauna, Wis College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, also a graduate in pharmacy formerly city physician, died May 21, aged 78, of carcinoma

Moore, William Banner, Rural Retreat, Va , College of Physicians and Surgeons, Baltimore, 1893, died May 30, aged 81, of cerebral hemorrhage

Newton, Ralph Waldo ⊕ Major United States Army, retired, Santa Rosa, Calif , New York University Medical College, New York, 1898, member of the Massachusetts Medical Society, served in the Philippine Islands from 1900 to 1905 and again from 1912 to 1915 while in the Medical Reserve Corps of the Army, entered the Medical Corps of the regular Army in 1918, retired for disability, May 31, 1933, died July 21, aged 76, of coronary thrombosis

O'Brien, David William, Fishersville, Va , Jefferson Medical College of Philadelphia, 1925, died in the Kings Daughters Hospital, Staunton, June 23, aged 53, of coronary thrombosis

Parham, LeRoy Glenn ⊕ Atlanta, Ga , Emory University School of Medicine, 1915, served during World War I, died July 12, aged 62, of coronary thrombosis

Parrish, Isaac Newton, Freeman, Mo (licensed in Missouri in 1901) member of the American Medical Association, served during World War I, died July 1, aged 77, of pulmonary thrombosis

Perkins, Robert Browning, Houston, Texas, Washington University School of Medicine, St. Louis, 1944, member of the American Medical Association served during World War II, died in San Antonio July 3, aged 31, of injuries received in an automobile accident.

Pierce, William, Chicago, Washington University School of Medicine, St Louis 1903, died July 6, aged 77, of acute coronary thrombosis

Pringle, Jesse Alva, Oconomowoc, Wis State University of Iowa College of Medicine, Iowa City, 1901 member of the Iowa State Medical Society and the American Medical Association, died recently, aged 75, of cerebral hemorrhage hypertension, and coronary heart disease

Redden, James Elmer, Casa Grande, Ariz., College of Physicians and Surgeons, Little Rock 1908 city health officer district physician for the Southern Pacific Railroad, affiliated with Norman Hospital where he died July 6, aged 66, of coronary thrombosis

Reed, Palmer Harding ⊕ El Paso, Texas, Tulane University of of Louisiana School of Medicine, New Orleans, 1928 member of the American College of Chest Physicians formerly practiced in Paducah Ky where he was past president of the McCracken County Medical Society died June 30, aged 46, of bronchial asthma and congestive heart failure

Repper, Paul Aloysius ⊕ McKeesport, Pa , Loyola University School of Medicine, Chicago, 1927 past president of the McKeesport Academy of Medicine affiliated with McKeesport Hospital, died July 2 aged 55, of coronary occlusion

Richardson, Ira Walter ⊕ Wakefield Mass , Harvard Medical School, Boston, 1915, served in France during World War I, since 1944 medical examiner of the Third Middlesex District, past president of the Middlesex East District Medical Society, school physician chief of medical staff, Melrose (Mass) Hospital, where he died July 1, aged 63, of cerebral hemorrhage

Roberts, James Stanton, Chester, N H Harvard Medical School, Boston, 1893 died July 11, aged 79, of metastatic carcinoma

Rust, Aloney Lyman, Malone, N Y , Syracuse University College of Medicine, 1900, on the staff of the Alice Hyde Memorial Hospital, died July 1, aged 74 of arteriosclerotic heart disease and diabetes mellitus

Ryan, Ralph R , Scarsdale, N Y , Columbia University College of Physicians and Surgeons, New York 1905, member of the American Medical Association served as health officer, a founder and director of Scarsdale National Bank, died in Santa Monica, Calif , July 1, aged 71, of heart disease

Sauer, William Walter, Marietta, Ohio, Miami Medical College, Cincinnati, 1905, life member of the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Otolaryngology, on the staff of Marietta Memorial Hospital, died June 30, aged 68, of cerebral embolism

Schnipelsky, Louis Arthur ⊕ Bath, N Y University of Bristol Faculty of Medicine, England, 1936, affiliated with the Veterans Administration Center, died in Bath Memorial Hospital recently, aged 44, of myocardial infarction

Schweitzer, Ada Estelle ⊕ Indianapolis, Indiana Medical College, School of Medicine of Purdue University Indianapolis, 1907, an Associate Fellow of the American Medical Association, for many years director of the division of infant and child hygiene of the state board of health, member of the American Academy of Pediatrics fellow of the American College of Physicians, died July 2, aged 78, of cerebral hemorrhage

Sheeran, James Douglas, Albany, N Y , Long Island College of Medicine, Brooklyn, 1936, served during World War II, member of the American Medical Association, affiliated with the Veterans Administration, died in the Veterans Administration Hospital June 18, aged 42, of heart disease

Sherman, Morris Mortimer, Brooklyn, Long Island College Hospital, Brooklyn, 1911, specialist certified by the American Board of Psychiatry and Neurology, member of the American Psychiatric Association chief alienist of the Kings County Hospital in Brooklyn, Queens General Hospital in Jamaica and Richmond Hospital in Staten Island for many years, on the staff of Unity Hospital, died June 21, aged 62, of carcinoma of the bladder

Stenbuck, Joseph Benjamin ⊕ New York, Columbia University College of Physicians and Surgeons, New York, 1917, specialist certified by the American Board of Surgery, fellow of the American College of Surgeons, served overseas during World Wars I and II, affiliated with Harlem and Sydenham hospitals, died June 1, aged 59, of coronary thrombosis

Stowers, Guy A , Gilman City, Mo , Kansas City (Mo) Medical College, 1900, died in the Bethany (Mo) Hospital June 11, aged 77, of injuries received in an automobile accident

Stratton, Forrest LeRoy ⊕ Kilgore, Texas, University of Oklahoma School of Medicine, Oklahoma City, 1926, died recently, aged 47, of acute hepatitis and cirrhosis of the liver

Strayer, John Curvin ⊕ Buchanan Mich , University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912, past president of the Berrien County Medical Society, formerly village president and mayor president and for many years a member of the board of education, on the staff of Pawating Hospital in Niles and Memorial Hospital in South Bend, Ind , died June 10, aged 64, of subarachnoid hemorrhage

Stuhr, Walter Anthony ⊕ Chicago, Northwestern University Medical School, Chicago, 1910, served on the staff of Grant Hospital, died in Council Bluffs, Iowa, June 5, aged 70, of acute myocardial infarction

Summers, Porter Whitefield, Chicago, Bennett Medical College, Chicago, 1912, died in St Elizabeth s Hospital June 8, aged 68, of arteriosclerotic heart disease

Threlkeld, Richard L., Denver; Louisville (Ky) Medical College, 1902, member of the American Medical Association, died July 5, aged 74, of acute coronary occlusion

Tracy, Robert Graham, New Haven, Conn , Yale University School of Medicine, New Haven, 1900, affiliated with Grace Hospital, died July 7, aged 73, of anuria

Viley, Leland Peak, Kansas City, Mo , Washington University School of Medicine, St Louis, 1908, member of the American Medical Association, died in the Neurological Hospital June 3, aged 68, of terminal pneumonia

Walker, Charles Bickley, Ripley, Tenn , Vanderbilt University School of Medicine, Nashville, 1886, died June 12, aged 92

Walker, Moses Rollin ⊕ Oakland, Calif , College of Physicians and Surgeons, San Francisco, 1901, an Associate Fellow of the American Medical Association and in 1915 and 1921 a member of its House of Delegates, formerly practiced in Reno, Nev , where he was medical supervisor for the public schools, president of the board of education, and for one term city health officer; a member and past president of the Nevada State Medical Association, died June 10, aged 88, of intestinal obstruction

Warren, Robert Emmett, Nashville, Tenn , (licensed in Tennessee in 1910), member of the American Medical Association, died July 15, aged 64

Weinstock, Michael Benjamin ⊕ Newark, N J , University and Bellevue Hospital Medical College, New York, 1917, fellow of the American College of Surgeons, served during World Wars I and II, on the staffs of City Hospital and the American Legion Memorial Hospital died June 28, aged 56, of lobar pneumonia and carcinoma of the lung

Welfer, Clarence Robinson ⊕ Los Angeles, University of Pittsburgh School of Medicine, 1919, died recently, aged 56, of coronary occlusion

Wheeler, William Martin, Sedalia, Mo , Kentucky School of Medicine, Louisville, 1893, member of the American Medical Association, served overseas during World War I, county coroner for one term, shop surgeon for the Missouri Pacific Railroad, died in Missouri Pacific Hospital, St Louis, July 22, aged 81, of carcinoma of the throat

Wood, Dorothy Augusta ⊕ San Mateo, Calif , Stanford University School of Medicine, San Francisco, 1919, formerly on the faculty of the University of California Medical School, specialist certified by the American Board of Anesthesiology, member of the American Society of Anesthesiologists, on the staff of Mills Memorial Hospital, where she died June 8, aged 57, of coronary artery disease

Yount, John Henry, Chicago, Vanderbilt University School of Medicine, Nashville, Tenn , 1906, died in Wesley Memorial Hospital June 6, aged 67, of peritonitis and uremia

DIED WHILE IN MILITARY SERVICE

Hardgrave, George Louis Jr , Clarksville, Ark , born in Clarksville May 7, 1916, University of Arkansas School of Medicine, Little Rock, 1942, interned at St Luke's Hospital in Jacksonville, Fla then was appointed assistant surgeon with the rank of lieutenant (jg) in the medical corps of the U S Naval Reserve, attended the Naval School of Aviation Medicine at the Naval Air Station, Pensacola, Fla , and on completion of this course was designated a flight surgeon, during World War II served at various naval air stations in the United States and on board the *USS Blakly* (DD 150), released from active duty on July 11, 1946, at the outbreak of the Korean action he volunteered and was ordered to duty Nov 8, 1950, attended a refresher course in Aviation Medicine at the Naval Air Station, Pensacola, and was subsequently assigned to Patrol Squadron Forty two for duty involving flying as a flight surgeon killed in a plane crash while attempting a night single engine landing at an airfield in Japan April 22, aged 34

GOVERNMENT SERVICES

SELECTIVE SERVICE

The Selective Service System—The following information was received from the National Advisory Committee to the Selective Service System, 1712 G Street N W, Washington, D C, on Sept 14 1951

RELEASE FROM SERVICE

The Department of the Navy is using the following policy in regard to release from service of physicians and dentists (former registrants and reservists)

	Months
Priority 1	24
Priority 2	12 24
Priority 3	24
Priority 4	
(12 months during World War II)	12 17
(Less than 12 months during World War II)	12 24

The Department of the Army is operating, at present, on the following program

Any physician or dentist who served 12 months during World War II becomes eligible for release after 17 months of current service except those called in Organized Reserve Units who will serve the full 24 months

The Department of the Air Force is operating, at present, on the following program

Any physician dentist or veterinarian may request release after 21 months of service If he was in Priority 1 or 2 the 21 months must be during the present term of service

INDUCTION GROUP

Requests for delay in active duty orders have been asked for some of those physicians who accepted commissions after receiving orders for induction, and before being inducted This is entirely out of order except where there are very special extenuating circumstances Therefore the Health Resources Advisory Committee is calling all records of such cases to Washington for review In fairness to the state committees there have been instances where such delays have been requested and granted without the knowledge of the committee, or without regard to the advice of the committee

PHYSICIAN DRAFT

The following item was taken from *Selective Service* for August, 1951

The planned induction under Selective Service of 333 Priority 1 medical officers scheduled during the month of August has been delayed temporarily at the request of the Department of Defense

In requesting the delay the Department of Defense stated that the delay was based entirely upon an unanticipated and sustained increase in the number of doctors applying for Reserve Commissions in the Armed Forces Whether or not all of the doctors whose induction will be delayed during August will be called during September is dependent upon the volunteer rate during the next few weeks the Department of Defense said

The Secretary of Defense has indicated that no reduction is anticipated at this time for the call of 152 Priority 1 doctors scheduled to be inducted during September

PHYSICIAN INDUCTIONS

The following item was taken from *Selective Service* for September, 1951

State Directors have reported to National Headquarters that many of the special registrants ordered by their local boards to report for induction on the July call for 717 doctors were found to have been previously commissioned This brought to light the fact that the Armed Forces were not in every instance forwarding a D D Form 44 to his local board after a man was commissioned

Since the July call for special registrants was issued the Armed Forces have commissioned 429 doctors Of this number 333 received Army commissions 186 Air Force 3 Navy and 7 were commissioned by the United States Public Health Service

Incomplete reports from the States also disclosed that 10 doctors were declared physically unfit 80 were reclassified, postponed or cancelled 2 were inducted an indefinite number are still pending for one reason or another and another very small number are believed to be delinquent and will be reported as such by their local boards.

Of the two inducted it has recently been reported in the public press that one of them agreed to accept a commission after completion of 3 days service as an enlisted man.

ARMY

Anniversary of Birth of Walter Reed—The 100th anniversary of the birth of Walter Reed, major, U S Army, conqueror of yellow fever, was commemorated Sept 13 at New York University College of Medicine, where he received his M.D degree in 1873 The College of Medicine opened an exhibit depicting Dr Reed s life and work, and a new portrait of the distinguished alumnus was presented to the College

The speakers at this event were Acting Chancellor James L Madden of New York University, Dean Currier McEwen, of the College, and Dr Walter Levy, president of the Alumni Association The portrait is being carried on the cover of the current issue of the alumni magazine, the *New York University Medical Quarterly*

Personal—A retirement ceremony was held at Fort Monroe Va recently for Brig Gen Robert P Williams, chief Army Field Forces Medical Section, and Col Henry S Blasse, post surgeon, both of whom retired after many years of faithful service in the Army Medical Corps Brigadier General Williams, after his return from Europe, where he will visit field medical units for the Surgeon General's office will make his home in Baltimore, where he will become deputy state health commissioner Colonel Blasse plans to settle in San Antonio, Texas

AIR FORCE

Award and Commendation.—The Air Force announced Sept 4 that the Legion of Merit has been awarded to Dr Cortez F Enloe, a consultant to the USAF Medical Service, for wartime service in research on the effects of bombing on health and medical care The medal was presented to Dr Enloe by the Surgeon General of the Air Force at a ceremony in The Pentagon During World War II, Dr Enloe was chief of the Medical Sciences Branch of the U S Strategic Bombing Survey which compiled data on planning military and civilian defense measures against aerial bombardment His report, subsequently produced as a War Department publication The Effects of Bombing on Health and Medical Care in Germany, has become a standard reference for military and civilian defense planning Dr Enloe was a major in the Medical Service during the war, and for the past two years has been a consultant to the Air Force Surgeon General s office He is a specialist in internal medicine

CIVIL SERVICE COMMISSION

Positions Open at St. Elizabeth's Hospital—The Civil Service Commission announces a medical officer examination for filling the following positions in St Elizabeth s Hospital, Washington D C rotating intern $2 200 a year, psychiatric resident, $3 400 to $4,200 a year surgical resident $4,200 to $4,700 a year, and *general practice resident* $3,400 to $3,800 a year All applicants must have had appropriate education in an approved medical school Applicants for psychiatric, surgical, and general practice resident must also have completed a one year internship In addition applicants for surgical resident *appointments must* have completed a two-year *residency in* surgery No written tests are required The maximum age limit is 35 years

Persons who applied for but did not receive *appointments* under the commission s 1950 examination for the above positions should apply for this new examination

Information may be obtained from the U S Civil Service Commission Washington 25, D C, or from most first and second-class post offices Applications will be accepted until further notice by the Committee of U S Civil Service Examiners St Elizabeth s Hospital Washington 25, D C

PUBLIC HEALTH SERVICE

Malaria in Returning Military Personnel—More than 800 cases of malaria among military personnel returning from Korea have been reported to the U S Public Health Service by state health authorities recently Seven states alone reported over 600 new cases in July most of them contracted outside the United States The seven states with the number of cases reported from each are Arkansas, 38, Colorado, 65, Georgia, 237, Kentucky, 97, Oklahoma, 101, Oregon, 29 and Wisconsin 60 (total, 627)

These figures are only tentative, according to the Surgeon General, since many Armed Services hospitals do not report new cases to state health departments, whereas some of the cases may have been reported by more than one service hospital It is also difficult to determine precisely the number of service-connected cases because reports from some states do not distinguish between military and nonmilitary cases or between those acquired in this country and abroad

Despite their incompleteness, the reports to date emphasize the need for effective control measures Dr Scheele warns More cases were reported in July than during the preceding six months "As long as prompt and adequate surveillance and preventive action are taken, he stated, 'a resurgence of the malaria epidemics of 25 and 50 years ago can be avoided ' He added that prior to Korea vivax malaria, which once blanketed large sections of the United States extending as far north as Canada and incapacitating hundreds of thousands of persons annually, had virtually been eliminated from this country as a result of improved living conditions and the widespread use of insecticides

Only two proved new cases of malaria contracted in the United States have been reported in this country so far this year," Dr Scheele stated, but we are continuing our investigations, through the state health departments, to ascertain the status of domestically acquired malaria "

The National Office of Vital Statistics sent a telegram to each state health department the last week in August requesting that malaria cases be included in their weekly reports to the Public Health Service NOVS asked further that the cases be identified according to their origin—that is, whether civilian or from military establishments NOVS asked also for state-by state figures from Jan 1 to the date of the telegram This information will be made available in detail in subsequent NOVS publications

Dr Scheele said that all health officials must remain continuously vigilant if the spread of imported malaria is to be prevented He pointed out that a letter was sent out by the Public Health Service early this month to all state and territorial health officers, calling for competent diagnosis, adequate treatment, prompt reporting, and preventive use of insecticides The letter recommended that health officials notify all physicians to send blood specimen slides of malaria or suspected malaria cases to the National Depository for Malaria Slides, at Chamblee Ga , that they treat the patients with modern antimalarial drugs which relieve symptoms promptly, and that they recommend spraying with residual insecticides in all houses within a mile of the residences around which malarial mosquitoes may be found

The Training of Foreign Physicians—Training in the United States for 523 foreign physicians and other health workers during the 1951 fiscal year was arranged and supervised by the Division of International Health of the U S Public Health Service This is the second year that over 500 foreign trainees have been given this service by the division The 1951 fiscal year also marked completion of a program to train 100 Filipino public health specialists under the Philippine Rehabilitation Act of 1946 The outstanding change that occurred during the year was doubling of the number of specialists who came for training under fellowship programs There were 290 persons in this category, compared with 134 during 1950 These trainees came from 50 countries While the fellowships usually are for one year of training they may be for periods of 60 to 90 days or for as long as two years They were provided under Point IV bilateral programs of technical assistance to underdeveloped areas under special programs of the Department of State the Economic Cooperation Administration, the Philippine Rehabilitation Act and the World Health Organization, and under programs sponsored by authorities for the government and relief of occupied areas, including Germany, Austria, Japan, and the Ryukyus

There were 233 other health workers for whom the division arranged itineraries and advanced training during the year These specialists did not hold United Nations or United States fellowships, and their training was sponsored by nongovernmental organizations or by their own governments They came from 54 countries with the largest number, 77, from Europe, and about 50 each from the Middle East and Africa, the Far East, and the Americas

Investigate Outbreak of "Pleurodynia "—Two scientists from the laboratory of infectious diseases of the National Institutes of Health, Public Health Service are in Bonham, Texas, at the request of the state health department to investigate an outbreak of illness resembling pleurodynia which has been reported in Fannin County and the nearby area They are Dr Robert J Huebner, chief of the virus section of the laboratory, and Dr Joseph A Bell, epidemiologist The attack rate of the disease is high, and it has appeared in all age groups, according to a report sent to the Public Health Service by Dr George W Cox, state health officer It is estimated that several thousand cases have occurred since the outbreak began

State and Federal laboratories are proceeding with an investigation to isolate the etiologic agent This includes virus studies of stool and throat washings and complement fixation and neutralizing tests on paired blood sera Dr Huebner has sent 200 blood specimens by air to the infectious disease laboratory at the National Institutes of Health for additional analysis and testing Health authorities surmise that the outbreak may represent a Coxsackie infection, possibly of the B type, but final determination awaits the outcome of laboratory studies

Dr Cox reports that the disease is generally mild rather self-limited, and of short duration Symptoms are frequently severe, consisting of fever from 101 to 104 F , nausea, vomiting, and particularly severe pain across the upper abdomen or lower chest Frequently the patient has complained of difficult or painful breathing Some of the earlier cases were originally thought to be appendicitis because of the localized pain in the lower right quadrant and the sudden onset of fever

Search for Genetic Damage in Radiologists' Children.—A national survey to determine the prevalence of congenital malformations among the children of physicians, laboratory aides, and others who are constantly exposed to radiation through their work in x ray or radium therapy will be made with the aid of a Public Health Service grant This survey, to be made among some 4 000 radiologists in the United States, will be the first attempt to determine in a human population whether and how radiation causes important hereditary changes within a period of one or two generations The outcome of the study, under the direction of Dr Stanley H Macht of the Washington County Hospital, Hagerstown Md , may throw some light on radiation effects which may result from atomic warfare, it may reveal whether current protective measures for workers in radiological laboratories are really safe

Dr Macht will make his survey through a questionnaire which will ask not only what defects have developed among the children of radiological workers but also what effects radiation may have had on child bearing (In lower mammals radiation during the period of gestation has often created marked genetic variations from normal in the offspring) The results of this questionnaire will be compared with results of the same questionnaire sent to a group of 4,000 physicians who do not come in contact with radiation of any type

This grant is one of 283, totalling $2,255,392, approved by the Surgeon General of the Public Health Service, following the recommendations of the National Advisory Health Council at its last meeting

Heart Institute Grants.—The Heart Institute of the National Institutes of Health has made grants totalling $3,048,640 to 81 medical schools, hospitals, research institutions, and private individuals in 32 states the District of Columbia, and Puerto Rico in support of basic and clinical heart research The grants were approved by Dr Leonard A Scheele, Surgeon General of the Public Health Service, on recommendation of the National Advisory Heart Council They constitute the first of several groups of grants for heart research to be made by the institute in the new fiscal year beginning July 1 A total of $5,062,275 was awarded in support of similar research during the last fiscal year

FOREIGN LETTERS

SWEDEN

Comparison of Amithiozone and Paraaminosalicylic Acid—The introduction by Domagk of amithiozone (conteben®) as a remedy for tuberculosis has been followed by a spate of publications on this subject particularly in Germany, where this preparation is widely used It has been well received in Sweden, where its chief competitor in this field is paraaminosalicylic acid In 1948 the Swedish National Association Against Tuberculosis sponsored a statistical investigation of the comparative merits of paraaminosalicylic acid and expectant treatment of tuberculosis, in which results with paraaminosalicylic acid were most favorable During the latter half of 1949 and early in 1950, an attempt was made at the Söderby Hospital to ascertain which of the two remedies amithiozone or paraaminosalicylic acid is the more effective in pulmonary tuberculosis

This investigation has been reported on by Dr Rune Ravell in the journal of the Swedish Medical Association *Svenska Lakartidningen* for Aug 3 1951 Fifty four patients, most of them with chronic, advanced disease, unsuitable for lung collapse therapy were selected for this investigation, 27 receiving amithiozone and 27 paraaminosalicylic acid They received during the 12 weeks of this test only rest and the usual sanatorium regimen None of them had hitherto received any specific chemotherapy The amithiozone was given in an initial dose of 0 025 gm twice daily and raised at 10-day intervals to a final dosage of 0 5 gm four times daily Paraaminosalicylic acid was given in four doses of 5, 2, 2 and 5 gm, for a total daily dose of 14 gm The effects of this treatment were judged by clinical findings supplemented by sedimentation rate and sputum and roentgen findings Both remedies scored considerable success, of approximately equal value But several more amithiozone treated patients had to discontinue treatment because of complications traceable to this drug than was the case with paraaminosalicylic acid treated patients These complications were also more serious in the amithiozone treated than in the paraaminosalicylic acid treated patients

Corticotropin (ACTH) for Rheumatic Fever in Childhood—At the Children s Department of the Norrkoping Hospital, Brita Appelbom and Sven Tornqvist have had encouraging results with the Danish corticotropin preparation acton" which was given to six children, 4½ to 10 years of age, with acute rheumatic fever Their detailed records show, among other things, how promptly the electrocardiographic changes improved under this treatment The cost of the preparation is at present about one Danish krone per milligram Even when such treatment entails an expenditure of several hundred kroner in each case, these sums evidently represent a sound investment of capital, in view of the results achieved All these children have been treated too recently to permit claims of lasting cure

Swedish National Association Against Tuberculosis.—The 1950 annual report of the Swedish National Association Against Tuberculosis gives a good account of what this body is doing In an appendix to the report is published the list of gifts received from 1904 through 1950 It is interesting to note the wide fluctuations each year in the sums given to such a representative national body For example, 1917 was a good year, with donations amounting to over 237 000 kr whereas in 1914 the total was less than 9 kr The total for the whole of this period ran into millions Other important sources of revenue were sales of Christmas and New Year seals and telegraph forms These alone brought in over a million kr in 1950

The Association has many expenditures A short film on BCG vaccination and another on mass radiography are loaned to cinemas as curtain raisers" Publications include the Association's quarterly journal and a great number of special reports, among them a survey of tuberculosis mortality in Sweden in 1943 1946 and a report on the activity of tuberculosis institutions in Sweden in 1949 In 1950 a statistical study of treatment with paraaminosalicylic acid (PAS) was based on the experiences of five of the Association s sanatoriums and was published in the *American Review of Tuberculosis* (Vol 61, 1950) Another statistical study was undertaken in 1950 at four sanatoriums to ascertain the relative merits of paraaminosalicylic acid and streptomycin in the treatment of pulmonary tuberculosis This study will be published in 1951

The Association also makes important financial contributions to special scientific investigations One of these is a follow-up study of school children vaccinated with BCG in Stockholm A study by Professors Hans Davide and Hugo Theorell is concerned with antibiotics and tuberculosis, and a study by Prof Alf Westergren deals with multiple infections associated with tuberculosis In 1950 the Association helped to finance the visits of Swedish scientists to England, Italy, Argentina, Switzerland, France, and other countries

NORWAY

Hepatitis Among Laboratory Nurses—At the Ullevaal Hospital some curious observations have been made concerning the liability of laboratory nurses to develop hepatitis Every year at this hospital there are usually 500 probationer nurses, 645 trained nurses and 55 laboratory nurses who first were given the usual nursing training Between Jan 1, 1945, and Dec 31, 1951, there were as many as 58 cases of hepatitis among the nursing staff Nineteen of these patients were probationer nurses, another 19 were fully trained nurses, and 20 were laboratory nurses at the time they fell ill Most of these laboratory cases occurred during the first year of laboratory service Dr V Gaustad, who supplied these figures, pointed out how difficult it is in practice to protect laboratory nurses from infection when they have to deal with samples of blood and plasma The ideal would be to produce an effective vaccine he referred hopefully to the experimental investigations recently undertaken by Henle and his associates whose findings were published in 1950 in the *Journal of Experimental Medicine*

Norwegian National Association Against Tuberculosis—The annual meeting of the Association on May 28 was the occasion for a series of conferences on its functions and the expansion or limitation of its activities according to the varying needs of the times In 1946 the name of the organization was expanded to *The National Association Against Tuberculosis for the Health of the Nation* While tuberculosis is decreasing year by year the revenue of the Association has decidedly increased For this reason also, it seemed fitting that the organization look further afield than to the immediate care of the tuberculous

One of the principles of the Association in the past has been to take up new work and later, when everything was running smoothly to pass it on to the state or municipalities in order to turn to more pressing needs Thus the Association started the BCG laboratory in Bergen in 1937 under the leadership of Dr Konrad Birkhaug, who had brought a BCG strain from the Pasteur Institute in Paris The work and costs of this laboratory have increased greatly, especially since 1947, when BCG vaccination was made compulsory in Norway At its annual meeting this year the Association called on the state to take over this laboratory as of July 1 1952 when its equipment would be offered as a gift to the state

With revenues set free by steps such as this the Association will be able to expand its activities in other directions, notably the training of nurses, the welfare of the aged, and popular health education The Association s secretary general, Dr Tobias

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The items in these letters are contributed by regular correspondents in the various foreign countries.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A M.A Arch Surgery, Chicago

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*Sympathetic Nerve Block in Early Acute Cholecystitis D Eastwood and N A Womack —p 128

Sympathetic Nerve Block in Cholecystitis.—Eastwood and Womack practiced paravertebral procaine block in 14 patients with acute cholecystitis Ten patients obtained immediate and complete relief from pain, which lasted 24 hours to several weeks At operation one to two days after the injection, six of these patients were found to have subsiding acute cholecystitis One patient, who had undergone cholecystectomy in another hospital several years before was found to have a long cystic duct remnant with surrounding scar tissue enmeshing sympathetic nerve fibers One patient with a long history of pyloric ulcer had a normal gallbladder but an inflammatory process resulting from an ulcer in the region of the hepatic plexuses In one patient with pain and jaundice who had immediate relief from pain and rapid subsidence of the jaundice a normal gallbladder was found at operation but there was severe hepatic degeneration with cholangitis The jaundice in this case was interpreted as due to reflex spasm of the sphincteric mechanism of the common bile duct In one patient who received relief, the abdomen was not explored because of marked obesity Of the four patients who received no relief, one had multiple liver abscesses associated with typhoid with diaphragmatic and parietal wall involvement, one had a previously ruptured gallbladder with subphrenic abscess, and two were not subjected to operation a diagnosis of psychoneurosis being established after further study

American Heart Journal, St Louis

41 803 946 (June) 1951

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*Heart Puncture II Cardioangiography Clinical and Electrocardiographic results V B Nuñez and E. R Ponsdomenech —p 855

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Nature of Left Axis Deviation in Congenital Cardiac Defects with Right Ventricular Hypertrophy I G Kroop M F Steinberg and A Grishman —p 891

Vectorcardiograms Obtained in Patients with Right Ventricular Hypertrophy Whose Electrocardiograms Display an Unusual Axis Deviation or Left Axis Deviation R. P Lasser and A Grishman —p 901

Measurement of Blood Flow—It has been claimed that the rate of disappearance of radioactive sodium (Na^{24}) from muscle after its intramuscular injection is a measure of the efficacy of local tissue circulation and that this test can be used in the evaluation of peripheral vascular disorders Results of the present study do not confirm this claim The rate of clearance of Na^{24} from the gastrocnemius muscle was determined in 34 subjects of different ages Thirteen of these had intermittent claudication, the others had no clinical evidence of vascular disease The clearance rates at rest and after exercise varied widely and were not significantly different in the two groups The authors conclude that Na^{24} clearance is not a reliable measure of blood flow There appears to be no direct relationship between the two, although this can be established with certainty only by simultaneous direct measurement of blood flow and estimation of Na^{24} clearance

Cardioangiography.—The injection of a radiopaque substance directly into the ventricular chambers as a means of roentgenologic visualization of the heart and great vessels was studied by the authors in 30 patients They performed 45 cardiac punctures on these patients without mortality or serious reaction, injecting 50 cc of 75% iodopyracet solution (diodrast*) into the right ventricle under a pressure of 25 lb and into the left ventricle under a pressure of 30 lb The puncture produced no symptoms in 18 patients, eight complained of slight discomfort in the upper abdomen or retrosternal region and four reported amelioration of preexisting dyspnea and cough There were no variations in blood pressure at the time of the puncture, but when the iodopyracet was injected the systolic blood pressure dropped 10 to 40 mm of mercury in most cases In one patient the pressure dropped to zero but rapidly returned to normal after the administration of nikethamide (coramine*) and of ephedrine There were no fluoroscopic or auscultatory changes following the puncture Electrocardiographic changes were minimal Transitory ventricular extrasystoles were frequently seen at the moment of puncture of the myocardium On four occasions immediately after the injection of iodopyracet into the right ventricle a transient right bundle branch block was observed One patient with a preexisting posterior wall infarction showed no variation in the electrocardiogram during or after cardioangiography This procedure yielded clearer roentgenograms of the ventricular chambers, coronary arteries and great vessels than those obtained when the opaque medium is introduced into a peripheral vessel The method was of particular diagnostic value in demonstrating changes in pulmonary circulation and in the aorta, including the abdominal aorta and its branches

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An asterisk (*) before a title indicates that the article is abstracted

Am J Roentgenol, & Rad Therapy, Springfield, Ill

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Studies of Intracranial Tumors with Fluorescein Dyes —In the last few years attempts have been made to utilize a unique property of central nervous system vessels (blood brain barrier) for the diagnosis and localization of brain tumors It has been found that most positively charged (basic) dyes penetrate into the central nervous system, while negatively charged dyes (acidic) are generally incapable of passing into the brain tissue Under certain pathological conditions this barrier is broken down locally In the presence of a tumor or abscess an acid dye will easily penetrate into the area of the lesion but not into the surrounding normal brain substance The acid-chromogen dye sodium fluorescein has proved most useful, since low tissue concentrations can be readily detected because of the highly fluorescent properties of the dye under ultraviolet light At the Department of Surgery of the University of Minnesota Medical School fluorescein dyes were used routinely for craniotomies in which a brain tumor was suspected The surgeon hands the biopsy material suspected of containing tumor tissue to the nurse, who in turn holds the tissue under the ultraviolet lamp In the laboratory the fluorescein test has been used for the evaluation of brain damage following injection of noxious agents Most interesting are changes seen after intra arterial injection of radiopaque media commonly used to perform cerebral angiograms Rabbits were injected intra arterially with iodopyracet injection (diodrast®), and later fluorescein was administered intravenously Some brains revealed under ultraviolet light an intensely fluorescent hemisphere on the side of the injection indicative of a broken blood brain barrier The authors discuss the use of radioactive diiodofluorescein and the Geiger Muller counter in the preoperative localization of brain tumors The method has been used to localize brain tumors preoperatively, but it did not prove to be sufficiently accurate to be used as the sole diagnostic test Two other radioactive agents investigated were radioactive potassium (K^{42}) and iodinated (I^{131}) human albumin The value of these agents is discussed Improved instrumentation such as the adaptation of scintillation counters to clinical use should increase the validity of the radioactive dye test

Diagnosis of Chronic Cor Pulmonale —Marks and Zimmerman present the second of three reports on chronic cor pulmonale prepared at the Cleveland City Hospital The first report attempted to correlate the clinical and the autopsy findings The present report deals with the roentgen findings and the differential diagnosis The third paper will deal with the physiological findings on patients studied by cardiac catheterization A recent report indicated that in only nine of 39 patients with chronic cor pulmonale was a correct diagnosis made by a roentgenologic study Analysis of the reasons for failure suggests that diagnosis of cor pulmonale is easily missed because 1 The patient is frequently very ill when admitted, and roentgenoscopic examination cannot be done satisfactorily 2 Roentgenograms in both oblique and posteroanterior projections are not taken 3 Extensive pulmonary disease may obscure the cardiac outline in all projections For a diagnosis of cor pulmonale, selective enlargement of the pulmonary conus and artery, with or without hypertrophy of the body of the right ventricle, must be shown Pulmonary emphysema is almost always a demonstrable feature Careful correlation of the clinical catheterization and roentgen findings are necessary to exclude other causes of an enlarged pulmonary conus and artery These conditions are certain forms of congenital heart disease, such as interatrial septal defect, Lutembacher s syndrome, high interventricular septal defect, patent ductus arteriosus, Eisenmenger s complex, and pulmonic stenosis, and also mitral stenosis, thyroid heart disease, cardiac failure, aneurysm of the pulmonary artery, kyphoscoliosis, Ayerza's disease, and idiopathic dilatation of the pulmonary artery

American Journal of Surgery, New York

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Operative Correction of Portal Hypertension.—Nine of the 16 patients with portal hypertension reported on by the authors had cirrhosis of the liver, and came for treatment because of gastro intestinal hemorrhage and ascites Four of the nine were not benefited by surgical treatment and died either postoperatively or within five months Portacaval or splenorenal shunts prevented hemorrhage and ascites in four patients for one to two years One patient has no ascites 10 years after ligation of the splenic artery with splenopexy and omentopexy Seven patients with portal hypertension had a normal liver and were treated for gastrointestinal hemorrhage alone There were no fatalities in this group Four of these patients had had a previous splenectomy with temporary or no benefit Portacaval or splenorenal shunts were performed in four patients, with no recurrence of hemorrhage for one year One patient remained well for three and a half years following ligation of the splenic artery and splenopexy A patient with a previous splenectomy had no further hemorrhages during the four years following division of numerous varices and omentopexy It is suggested that ligation of the splenic artery be combined with a direct portacaval shunt to reduce the volume of blood carried by the portal system Enlarged lymphatic vessels paralleling the portal vein were observed in every case with ascites and cirrhosis They are probably related to the increased lymph flow from the portal vein capillaries into the surrounding lymph spaces incident to the portal hypertension The surgical approach recommended for portacaval anastomosis is through a subcostal incision, with vertical extensions at both ends and excision of the costal cartilage opposite the fifth interspace, permitting lateral displacement of the costal margin and lateral rotation of the liver following division of the round ligament

American Surgeon, Atlanta, Ga

17 471-570 (June) 1951

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Removal of Gallbladder —It has been maintained that the sphincter of Oddi becomes atonic and that the common bile duct undergoes a compensatory dilatation following extirpation of the gallbladder It was also believed that, if these changes do occur they are initiated by pathological processes rather than by the removal of the gallbladder Cholangiographic and manometric studies performed on 50 patients before cholecystectomy was done indicated that the pressure within the extrahepatic biliary system is governed by the secretory pressure of the liver and the resistance offered by the sphincter of Oddi When the sphincter contracts the ampullary orifice of the common bile duct is closed and the choledochal bile is forced into the gallbladder Evacuation of the bile occurs when the sphincter of Oddi relaxes and the gallbladder contracts The phase of sphincteric relaxation occurs at regular intervals and permits the bile to escape into the duodenum in rhythmic spurts No muscular movements, undulations or changes in the size, shape, or contour of the choledochus were observed, thus apparently bile ducts do not empty by peristaltic action Comparison of operative and postoperative manometric studies demonstrated that the sphincteric break occurred at the same levels in the anesthetized and nonanesthetized groups In studying the same patients after the removal of the gallbladder it was found that the common bile duct does not undergo a compensatory enlargement following the removal of the gallbladder Analysis of 1,700 cholangiograms of patients subjected to cholecystectomy failed to show dilatation of bile ducts unless some organic ductal obstruction was present Cholangiographic and manometric studies indicate that the spasmogenic drugs, such as morphine sulfate, demerol, dolophine and codeine sulfate, increase the tonal contractions of the sphincter of Oddi in both the patients having undergone cholecystectomy and those not operated on The spasmolytic drugs such as nitrites, aminophylline, diphenylacetyl diethylaminoethanol (trasentine®) hydrochloride, and papaverine, all cause the sphincter of Oddi to relax, but these effects are fleeting, as the intraductal pressures returned to normal within three minutes after administration of the nitrites and within 20 minutes after aminophylline Spasmogenic drugs, such as morphine sulfate, are more effective in relieving the pains of biliary colic than are the spasmolytic agents typified by the nitrites

Wound Bleeding During Operation Role of Blood Transfusions —When there is bleeding in the form of a massive generalized "ooze" from all cut surfaces of the operative wound, uncontrollable exsanguination and death may result The bleeding begins insidiously, usually during or immediately after operation, and proves refractory to all methods of hemostasis Of seven patients described, two were saved only because the surgical wounds allowed mechanical hemostasis by open packing All patients had received previous transfusions of whole blood, with known previous untoward reactions in four Clinical signs of transfusion reactions were sudden elevation of temperature, urticaria and jaundice, and sudden shock out of proportion to blood loss Laboratory evidence of hemolysis was present in four patients, with subsequent renal injury in one Determinations of subgroup differences other than major Rh factors were not done in any of the cases The possibility that shock and toxicity of anesthetic agents might play a part was considered, but most of the evidence incriminated blood transfusion reactions of hemolytic type Appreciably reduced platelets in three patients may have played a part in the blood dyscrasia Therapy was directed to all possible defects in the clotting mechanism, but without much effect Five of the seven cases occurred in a six months' period, three within the same month Investigations on technical matching and handling of blood have not been informative

Annals of Internal Medicine, Lancaster, Pa

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Gastric Acidity Before and After Gastric Cancer —Gastric acidity is subnormal in persons with gastric cancer The percentage of achlorhydria is about three times as great and mean free acidity is about 13 clinical units less than the standard in normal persons of the same sex and age The range of gastric acidity in gastric cancer is not greatly different from that of normal persons The degree of subnormality of gastric acidity in gastric cancer varies with sex, age, resectability, symptomatology, and size of the cancer A major part of subnormality of mean gastric secretory activity appears before gastric cancer develops Mean gastric secretory activity of the pregastric cancer patient is subnormal regardless of the decade of life in which the test meal is performed and as long as 20 to 25 years before cancer develops This subnormality in gastric cancer is progressive and selective Evidence now tends to support the hypothesis that atrophy of the gastric mucous membrane plays an important part in the depression of mean gastric secretory activity before the development of cancer and that the atrophic gastric mucosa is a soil in which gastric cancer frequently develops Values for free gastric acidity have a definite but limited clinical application in the gastric cancer problem Their practical value as a mechanism for screening the persons in whom gastric cancer is most likely to develop awaits further study and application These values will not enable one to distinguish with certainty between benign and malignant gastric lesions, but in the management of small ulcerating gastric lesions the degree of free acidity of the gastric contents without reference to other clinical, roentgenologic, and laboratory data gives valuable information about the relative chances of malignancy and of the relative danger of even a temporary trial of medical treatment. As a prognostic device, the degree of free acidity in a case of gastric cancer may offer some encouragement to patients with high acidity, for the higher the secretory activity of the cancerous stomach the better the chances of a five year survival

Maintenance Dose and Toxicity of Digitoxin—Ninety five male patients and 76 female patients were given digitoxin in the Colorado General Hospital Outpatient Heart Clinic All patients have been compensated and maintained at what was felt to be an optimal level of digitalization for periods varying from two months to two years Results showed that the maintenance dose of digitoxin is between 0 05 and 0 2 mg per day, with rare exceptions Because as many as one fourth of the patients may be maintained on 0 05 mg daily, such a tablet should be available Age, sex, and weight have little if any effect on the maintenance dose of digitoxin, although patients weighing over 180 lb (81 6 kg) may require slightly larger dosage Digitoxin has the advantage of standardization by weight and of nearly complete absorption of an oral dose The drug has the disadvantages of very slow dissipation The tendency of inexperienced persons is to overdigitalize gradually, over a period of a few weeks This effect may be easily overcome by frequent and careful observation of the patient Toxic effects may persist as long as a week after discontinuance of the drug Of 43 patients with toxic effects of the drug, 23 complained of symptoms of digitalis toxicity and 23 showed signs of digitalis toxicity Only three patients showed both simultaneously Digitoxin may occasionally be given for as long as two months before toxic symptoms are manifested It appears probable that with digitoxin toxic signs frequently appear before symptoms If this is true, close supervision becomes even more imperative

Insulin and the Carotid Sinus.—Five men and five women between the ages of 21 and 63 with diabetes mellitus were studied to determine the effects of insulin on the carotid sinus reflex. A fasting blood sugar test and electrocardiogram were taken with the patient in a semireclining position The right and left carotid sinuses were each stimulated for 15 to 25 seconds by simple finger pressure and massage, and lead 2 was taken during this procedure The patients were then given unmodified insulin, the doses depending on the fasting blood sugar level At one, two and three hours after insulin was given, venous blood was drawn and analyzed for glucose Lead 2 was then recorded before and during right and left carotid sinus pressure Changes in the heart rate and blood pressure, the presence or absence of dizziness and related symptoms, and the production of syncope were noted during all phases of the study While cardioinhibitory effects of varying degrees were obtained in nine of the 10 patients before insulin was given, more decisive and greater reductions in heart rate were recorded one, two, and three hours after the administration of insulin Pronounced effects were produced after insulin administration in the patient aged 21 and in four between the ages of 40 and 45 as readily as in those of the sixth and seventh decades There was no appreciable difference in the behavior of either sex Dizziness was elicited by carotid sinus pressure in nine patients one hour after insulin was given and in 10 patients two to three hours after they received insulin No relationship existed between the blood sugar levels (hypoglycemia) and the extent of carotid sinus response One patient lost consciousness and had muscular twitchings before receiving insulin Five patients became unconscious one hour after receiving insulin, and eight became unconscious two to three hours after administration of the drug One of these cases of syncope was the result of a purely vasodepressor response while the others were all associated with striking reductions in heart rate These studies showed that in patients with diabetes mellitus insulin increases the activity of the carotid sinus reflex and is capable of stimulating the cardiac vagus at nonhypoglycemic levels. The hypoglycemic effect of insulin was eliminated by the use of comparatively small doses of the hormone and by the administration of dextrose whenever blood sugar levels fell below 80 mg. In three of the patients, in whom both syncopal and cardioinhibitory effects were observed, atropine and its derivatives were used with insulin and were effective in eliminating these symptoms Withdrawal of the insulin in two patients yielded the same beneficial results In patients with diabetes who have reactions apparently due to insulin shock, the author believes that determination of blood sugar levels would often show normal or elevated amounts He contends that some of these occurrences are actually vagal effects similar to those seen in carotid sinus syndromes

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Associated Movements Between Limb and Respiratory Muscles as Sequel to Brachial Plexus Birth Injury P K Robinson—p 21
*Use of Terramycin in Rocky Mountain Spotted Fever A M Powell M J Snyder J V Minor Jr and others—p 30

Terramycin in Rocky Mountain Spotted Fever—The diagnosis of Rocky Mountain spotted fever in the seven cases reported was based on headache, typical rash and fever, and on laboratory findings Four of the patients were children of from 3 to 12 years of age, three were adults Terramycin was administered in initial doses of approximately 50 mg per kilogram of body weight In adults, approximately 3 0 gm was given initially, followed by doses of 1 0 gm every eight hours Children received approximately two-thirds of the adult dose Therapy was continued until the temperature reached normal levels, provided defervesence was accompanied by clinical improvement In six of seven patients treated there was a striking abatement of the clinical symptoms within 48 hours and signs of illness disappeared within 72 hours One adult patient failed to show significant improvement after two days of oral treatment with terramycin, probably because he failed to attain a satisfactory level of antibiotic in the blood owing to faulty absorption from the gastrointestinal tract Intravenous administration of chloramphenicol resulted in a high concentration of antibiotic and recovery ensued Conceivably, a comparable form of terramycin would have been equally effective Terramycin hydrochloride suitable for intravenous use is now available The oral administration of terramycin caused mild gastrointestinal disturbances, which, however did not necessitate interruption of treatment The results obtained with terramycin in Rocky Mountain spotted fever compare favorably with those derived from chloramphenicol and aureomycin Seriously ill patients should also receive transfusions

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SYMPOSIUM ON CORTISONE AND ACTH

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Long Continued Use of Cortisone —Administration of cortisone acetate to patients with rheumatoid arthritis usually suppresses the disease manifestations, but relapse ensues after withdrawal For sustained improvement cortisone must be given more or less continuously The improvement that results from cortisone administration does not represent a correction of a glandular deficiency by substitution therapy but rather a favorable effect from an induced state of hormonal excess Hyperadrenocortical effects with such unwanted signs as disturbances in electrolyte, water, and carbohydrate metabolism skin changes, such as hypertrichosis acneform eruption, pigmentation, and striae, abnormal fat deposition, menstrual disorders, mental changes, and retardation of wound healing may develop Seventy six patients with rheumatoid arthritis were given cortisone It was necessary to discontinue treatment in 16 of these before six months The remaining 60 patients received the hormone uninterruptedly for six to 15 months Initial suppressive doses were given until the clinical manifestations were brought under control For severe and moderately severe cases 200 or 300 mg of the hormone was administered on the first day, followed thereafter by daily injections of 100 mg , for moderate and mild cases, 100 mg was given on the first and subsequent days When rheumatic activity had been suppressed, reductions were made by *5 to 10 mg per* dose at intervals of every five to seven days The smallest daily amount of cortisone required to maintain adequate, although not necessarily absolute, control was considered as the maintenance dose which was then continued, with adjustments in the daily amounts being made from time to time as changes in the clinical response or as the development of objectionable reactions dictated It was found more prudent to be content with improvement short of adverse effects rather than to strive for total suppression with unsafe doses The ability to sustain satisfactory improvement usually varied indirectly with the severity of the rheumatoid arthritis Unwanted signs of hormonal excess developed in 40% of cases at some time during the treatment Most of them disappeared or lessened when the dose of cortisone was reduced but, when this was done, the improvement often also declined Evidence of functional suppression of the adrenal cortices, as indicated by a decreased response of circulating eosinophils to exogenous corticotrophin, was present during prolonged cortisone therapy The depression was temporary Whether irreversible damage may result when the drug is employed for longer periods cannot yet be determined

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Amebic Lung Abscess B H Sullivan Jr and F N Bailey —p 84
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Amithiozone in Tuberculosis.—Seventy five patients with moderately and far advanced pulmonary tuberculosis were treated with amithiozone (tibione®) or with amithiozone and streptomycin and/or paraaminosalicylic acid for six to 10 months *Anemia, leucopenia,* and granulocytopenia occurred in one patient who received 300 mg of amithiozone *daily This hematological crisis was controlled within a period of 12 days after* amithiozone was discontinued and intensive measures for restitution of the blood level were instituted The same patient then was given *150 mg* of amithiozone daily for 11 months without ill effect In daily dosage of 150 mg or less, amithiozone is a safe drug when administered under medical *supervision* and with adequate laboratory facilities It may be administered for long periods of time With a daily dose of 150 mg of amithiozone half of the authors' patients had a mild to moderate fall in hemoglobin and red blood cell count, and varying degrees of depression of the leucocytes *were observed in all patients* But these alterations were transitory and there was a return to normal with continued medication Of the 75 patients some degree of eosinophilia, usually transitory developed in 68, and of these 31 received no streptomycin The sedimentation rates failed to conform with improvement or *progression* of the disease Pretreatment total *serum proteins* and albumin and globulin determinations revealed hyperproteinemia and hyperglobulinemia in patients with long standing disease Results of liver function tests performed within two to six weeks after the start of therapy showed that amithiozone heightens or maintains the hyperproteinemia and hyperglobulinemia Cephalin flocculation tests revealed after 48 hours a 2+ flocculation in six patients and a 3+ flocculation in three patients receiving amithiozone therapy These results proved reversible in some of the patients with continued medication In three patients moderate degrees of icterus developed in association with slight to moderate hepatomegaly and anorexia, but this reaction to amithiozone was reversible and the drug may be resumed when the condition has subsided In 26 patients amithiozone caused gastrointestinal disturbances of mild to severe intensity, which disappeared when the drug was discontinued and were less likely to recur when administration of amithiozone was resumed Although it is too early to make a definite statement as to the therapeutic efficacy of amithiozone alone or in conjunction with streptomycin and/or paraaminosalicylic acid, it can be stated that conversion of sputum and clinical improvement was noted Combinations of amithiozone with streptomycin and of amithiozone, streptomycin and paraaminosalicylic acid seem to show greater clinical promise than any one of these substances used alone

Endocrinology, Springfield, Ill

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Concept of Mucous Barrier and Its Significance II Changes in Gastric Mucosa Produced by Local Actions of Spices and Other Irritative Agents E Sanchez Palomera —p 269

Chronic Ulcerative Colitis and Carcinoma —Carcinoma of the colon or the rectum developed in the course of long standing and advanced chronic ulcerative colitis in nine patients These patients were among 226 surgically treated cases of ulcerative colitis—an incidence of 3 9% Seven of the nine had the carcinoma in the rectum two in the transverse colon The seven rectal carcinomas were removed in the course of an operation for ulcerative colitis and were discovered only at operation or on examination of the surgical specimen The transverse colon carcinomas were proved by surgical biopsy in one case and by autopsy in another These patients had chronic ulcerative colitis for 13 to 25 years Eight of the nine patients died within three years after the discovery of malignancy The one surviving patient is in excellent condition five years after an abdominoperineal resection, but she has had two metastatic carcinomatous nodules removed from the vaginal mucosa in the past two years Most, but by no means all, of the previous reports on the relationship between chronic ulcerative colitis and carcinoma indicate that carcinoma develops oftener in patients with ulcerative colitis and at a younger age than in the general population The polyposis occurring as a complication of ulcerative colitis is considered by many to represent true adenomas that are precursors of carcinoma Some observers deny the increased incidence or any causal relationship between ulcerative colitis and carcinoma Although final proof is not available, evidence is mounting that long standing, severe ulcerative colitis is related to the occurrence of malignant change

Cortisone in Chronic Ulcerative Disease of Bowel.—At the Brooklyn Veterans Administration Hospital, seven patients with proved ulcerative disease of the large and small bowel were given cortisone Most of the patients were given 50 mg of cortisone twice a day for 10 days In some of the patients a second series of cortisone treatments was given Proctoscopic and roentgenologic studies were made before and after the cortisone therapy Studies of blood electrolytes (sodium and potassium), glucose tolerance curves, and Thorn eosinophil response tests were done in each case In one patient there was a return to normal of the diffuse pattern of altered function of the small intestine A patient with joint symptoms showed a temporary response to cortisone therapy There was no evidence of alteration in the basic electrolytic pattern of the serum, no clinical evidences of hyperadrenalism appeared, nor were there any symptoms of adrenal exhaustion after completion of treatment All patients showed normal adrenal response in terms of the Thorn eosinophil test There was no evidence of beneficial effects on the ulcerative lesions of the large or small bowel with cortisone therapy

GP (J Am Acad Gen Practice), Kansas City, Mo

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Iowa State Medical Society Journal, Des Moines

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Cesarean Sections in Iowa in 1949 M M Donnelly —p 252
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Toxoplasmosis in Pregnant Women.—During a short period in 1949 and 1950, 152 pregnant women, aged 23 5 on an average, admitted to the maternity service at the State University of Iowa, were tested for toxoplasmosis with the skin, neutralizing antibody complement fixation, and methylene dye reduction tests Careful obstetric histories were taken About half the group was nulliparous at the time of testing but most of the patients were delivered during the period of hospitalization and observation Of the 152 women, eight gave positive reactions to the tests, showing an incidence of subclinical toxoplasmosis of 5 26% The results of all four methods of testing correlated well The neutralizing antibody test seems to be the most consistent indicator, although the skin test is a reliable indicator in this type of survey In addition to the obstetric patients tested, seven infants were given skin tests to determine whether this method of testing would be deleterious to an infant No untoward symptoms were noted nor were any positive reactions recorded

Journal of Applied Physiology, Washington, D C.

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Improved Pellet Implanter W H Perloff —p 737
Cretinism with Goiter Case Report J B Stanbury —p 740

Progesterone in Cancer of Prostate —Trunnell and co workers treated 19 patients with histologically diagnosed prostatic cancer with progesterone or with anhydrohydroxy progesterone Of the nine who had received no other treatment eight improved but two of these later relapsed Of the 10 in whom the progesterone preparations were used after they had relapsed despite castration or estrogen therapy, seven showed some improvement In six instances patients were made definitely worse as a result of these medications Four of the six received anhydrohydroxy-progesterone Although efficacious, the progesterone preparations cannot be recommended in preference to castration or to estrogen administration, but for patients who have relapsed after other forms of treatment, a trial of progesterone is indicated The authors employed a daily intramuscular dose of 100 mg of progesterone in 80% sesame oil in 20% benzyl alcohol In the event of apparent stimulation of the cancer growth, the dosage is decreased to 50 mg per day and may be reduced to 25 mg per day if necessary Doses larger than 100 mg per day have not given additional benefit and may result in stimulation of the cancer Experience with anhydrohydroxy progesterone has been even more limited, and this substance seems to be a two-edged sword Doses of 50 mg per day by mouth are suggested

Journal of Clinical Investigation, Cincinnati

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Effect of Hexamethonium as Compared to Procaine or Metycaine Lumbar Block on Blood Flow to Foot of Normal Subjects H W Schnaper R L. Johnson E B Tuohy and E D Freis —p 786

Anti-Arthritic Agents Effects on Joint Temperature —This method for determining intra articular temperature consisted of inserting a filamentous copper-constantan thermocouple into the joint space (usually the knee) through the bore of an aspirating needle Serial intra-articular temperature determinations were made on 21 patients with rheumatoid arthritis before, during, and after a course of parenterally administered corticotrophin (ACTH) or cortisone Cell counts were made on the synovial fluid obtained at the time of aspiration for temperature determination in nine of the 21 patients There was a pronounced fall in joint temperature in every instance within the first 24 hours of corticotrophin or cortisone administration, which approached normal by the fourth day of the treatment period Joint fluid cell counts showed a pronounced drop Cortisone was administered orally to six patients with rheumatoid arthritis with serial joint temperature determinations showing a similar fall in every instance Eight patients with rheumatoid arthritis were given various other steroids for a period of one week and serial joint temperature determinations were made Cortisone was then substituted without the patients knowledge None of the supposed anti arthritic agents produced the fall in joint temperature that occurred in every case after the substitution of cortisone Serial joint temperature determination is suggested as a rapid and possibly specific laboratory method for establishing additional evidence of therapeutic effectiveness of anti arthritic agents

Journal of Infectious Diseases, Chicago

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Journal of Investigative Dermatology, Baltimore

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Journal-Lancet, Minneapolis

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J National Malaria Society, Columbia, S C

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III Eradication of Anopheles Darlingi from Inhabited Areas of British Guiana by DDT Residual Spraying. G Giglioli —p 142
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J Neuropath and Clinical Neurology, Chicago

1 183-260 (July) 1951

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Journal of Nutrition, Philadelphia

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Effect of Heat Treatment on Nutritive Value of Milk Proteins III Effect of Heat on Casein Lactalbumin and Their Lactose Induced Derivatives with Special Reference to Digestibility and Rate of Release of Lysine Methionine and Tryptophan B B Cook, J Fraenkel-Conrat B Singer and A F Morgan —p 217
Nitrogen Balance Index in Adult Rat as Affected by Diets Low in L and DL Methionine E S Nasset and J T Anderson —p 237
Energy Expenditure for Quiet Play and Cycling of Girls 6 to 14 Years of Age E. M Thompson M E R. Bal E M McIntosh and others —p 275
*Biological Value of Enzymatic Digest of Bovine Plasma A A Albanese R A Higgons G E MacDonald and others.—p 281
Energy Expenditure of Boys and Girls 9 to 11 Years of Age (1) Washing and Wiping Dishes (2) Boys Engaged in Carpentry and (3) Girls Sewing C M Taylor O F Pye M Schafer and S Wing —p 295
Improving Nutritive Value of Flour· IV Significance of Use of Enriched Flour in Diet B D Westerman and M Stone —p 313
Stability of Aqueous and Oily Vitamin A Acetate and Carotene Solutions J G Bieri —p 327

Digest of Bovine Plasma Value in Man —Investigation of the oral and parenteral nutritive value of an enzymatic digest of bovine plasma was undertaken in infants and adults It was found that the nitrogen retention and weight gains of male infants maintained on a synthetic" milk diet in which an enzymatic digest of bovine plasma constituted the principal source of protein, were equal, if not superior, to those obtained with an evaporated milk formula fed at the same fluid, caloric distribution, and nitrogen levels The nutritional value of the hydrolysate was not improved by reinforcement with isoleucine and methionine Tests of the digest given parenterally to adult males showed an average utilization of 86 3% of the infused nitrogen A comparison of available data on total amino nitrogen losses incurred by intravenous alimentation with various protein hydrolysate and amino acid preparations discloses that the losses found with the bovine plasma digest were not excessive In general, the total amino nitrogen wastage is higher with enzymatic digest of proteins The wastage of available peptides is about 30% of those infused, regardless of their concentration in the preparation However, the nutritional value of these products cannot be justly appraised by this criterion It is possible that the nutritional value of nitrogen derived from sources that include peptides may be greater than that of an equivalent amount of nitrogen in the form of a mixture of free amino acids

J Pharmacology & Exper Therap , Baltimore

102 71-144 (June) 1951

Cardiovascular and Respiratory Effects of 3 Hydroxy 2 Phenyl Cinchoninic Acid. H A Walker S Wilson C Farrar and others —p 71
Pharmacology of Mono Methyl Ethers of Mono- Di and Tripropylene Glycol in Dog with Observations on Auricular Fibrillation Produced by These Compounds F E Shideman and L Procita.—p 79
Protection Against Experimental Beryllium Poisoning by Aurin Tricarboxylic Acid M R White A J Finkel and J Schubert —p 88
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Action of Mercurial Diuretics on Effective Refractory Period Electrical Excitability and Conduction Velocity in Mammalian Heart. A Farah and W Mook —p 125
Study of Drug Action on Mammalian Ciliated Epithelium J V Scudi E T Kimura and J F Reinhard —p 132
Combined Action of Cardiotoxic Drugs Study of Acute Toxicity of Combined Quinidine Meperidine Pentobarbital Procaine and Procaine Amide B Calesnick, N H Smith and R Beutner —p 138

J Venereal Disease Information, Washington, D C.

32 177-202 (July) 1951

*Intramuscular Injections of Chloromycetin® in Treatment of Granuloma Inguinale F W Harb W G Simpson and C E Wood —p 177
Blindness Due to Syphilis J V Klauder—p 183
Effect of Additional 4 Minutes Rotation on Reactions to VDRL Slide Flocculation Test. W E Machala and F R Hassler —p 192.

Chloramphenicol in Granuloma Inguinale —Finely ground chloramphenicol (chloromycetin®) was suspended in graded amounts of sterile isotonic solution of sodium chloride until the resultant suspension contained 500 mg of chloramphenicol per cubic centimeter of suspension The final product had a consistency not unlike that of repository penicillin A single intramuscular injection of 2 gm of this suspension gave measurable serum levels for 24 hours and urinary excretion levels for 72 hours A 4 gm injection consistently maintained serum levels for 72 to 96 hours Initially, the treatment schedule was set at a single injection of 2 gm (4 cc of suspension) given intramuscularly every 96 hours for three injections, a total of 6 gm in eight days This schedule was increased to 4 gm every 72 hours after two patients treated with the previous schedule relapsed At another hospital a schedule of 4 gm of suspension every 96 hours was used from the start and throughout the study period Forty-three patients with granuloma inguinale were treated with this material Thirty-eight of these responded favorably and remained cured over follow up periods of from two to 11 months Two of the five patients who relapsed were in the group treated first, when too small doses were used No evidence of resistance to chloramphenicol was noted in the patients who were re treated The simplicity of the schedule in this parenteral administration of chloramphenicol makes this method suitable for use on outpatients

Kansas Medical Society Journal, Topeka

52 257-312 (June) 1951

*Carcinoma Developing in Jejunal Ulceration Following Gastroenterostomy for Peptic Ulcer Case Report W A Grosjean and J M Davis —p 257
Surgical Treatment of Extensive Skin Cancer of Lower Eyelid C A Hardin and D W Robinson —p 260
Uses of Radioactive Gold Colloid in Therapy and Palliation of Neoplastic Disease W N Harsha —p 263
Roentgenographic Study of Edentulous Jaws R W Edwards —p 267

Carcinoma in Jejunal Ulceration —Jejunal ulceration is a rather frequent complication of gastroenterostomy for peptic ulcer, but malignant degeneration of a jejunal ulcer following gastroenterostomy must be extremely rare, since a comprehensive review of literature revealed only one such case, which was reported by Santy in 1939 The authors report a case of their own A man, 67, with a ruptured pyloric ulcer was treated by closure of the perforation and short loop posterior gastroenterostomy He was well for 14½ years then rather suddenly a sense of fulness developed in the abdomen followed by pain, nausea and vomiting He improved temporarily on an ulcer regimen, but later had to be hospitalized, because of continued vomiting and loss of 40 lb (18 1 kg) in six months At operation a mass was found and removed by wide excision The operation involved transverse colectomy, subtotal gastrectomy, and resection of a portion of the jejunum beginning at the duodenojejunal juncture The jejunal and colonic continuity were reestablished by end to-end anastomosis, then antecolic, antiperistaltic gastrojejunostomy was done, and a small knuckle colostomy proximal to the colon anastomosis was made, after which the abdomen was closed in layers without drainage Approximately four weeks were allowed for improvement in nutritive state before the colostomy was closed Five and one half months later there was no evidence of recurrence Apparently, the inherent lack of potential of the epithelium of the small bowel for neoplasia is an important factor in the rarity of malignant degeneration in marginal ulcers The authors state that after completion of their report their attention was called to a number of similar cases reported in the European literature

Kentucky Medical Journal, Bowling Green

49 279-322 (July) 1951

*Use of Carob Flour in Gastro-Intestinal Disturbances H S Andrews —p 279
Use and Abuse of Cerebrospinal Fluid. E. Roseman —p 281
Comparative Value of Precordial Electrocardiograms Obtained with CF and V Leads M M Weiss and W R Gray —p 285
Expanding Industrial Health Requires Qualified Physicians G R Rowntree —p 290
Unusual Abdominal Findings Simulating Acute Appendicitis I Primary Omental Torsion II Solitary Diverticulitis of Cecum J F Van Meter and J B Floyd Jr —p 292
Tendinitis and Subacromial Bursitis K A Fischer and K D Leatherman —p 296

Carob Flour in Gastrointestinal Disturbances.—Carob flour is obtained from the pulp of the pod of the carob tree, which is found along the shores of the Mediterranean, in Southern Europe, in Africa, and in Asia A Spanish observer noticed that constipation developed in animals and children eating the flower and decided to use it in the treatment of diarrhea Andrews used carob flour in 100 children with diarrhea, who ranged in age from 7 days to 12 years Carob flour was used as an adjunct to fluid and electrolyte replacement therapy, chemotherapy of various types, and other routine measures Carob flour was never used unless the diarrhea was a major problem It was fed mixed with water and sweetened with saccharin, for 48 to 72 hours After this the flour was incorporated into the formula and fed at regular intervals After the formula was begun the water solution of carob flour was continued between feedings It was found most practical to use a 5% solution in children under 2 years of age and a 10% solution in those over 2 The author concluded that carob flour is of distinct benefit as an adjunct in the treatment of diarrhea Regurgitation of the fluid or formula containing carob flour was fairly frequent, but this did not seem to influence the progress or the improvement in the stools

Maine Medical Association Journal, Portland

42 165-212 (June) 1951

Ruptured Gastric Ulcer Unusual Complication Following Vagotomy and Gastroenterostomy J D Southworth —p 165
Peptic Ulcer and Pituitary Adrenal System F P Turner —p 170
Physical Medicine and Rehabilitation for Patients with Hemiplegia L R Burnham —p 173

Military Surgeon, Washington, D C

108 467 552 (June) 1951 **Partial Index**

Medical Problems of Military Aviation E. J Kendricks —p 467
*Study of Incontinence and Impotence Following Prostatic Surgery R B Rowe and J C Kimbrough —p 481
Practical Consideration of National Blood Program L R. Newhouser —p 483
Herpes Zoster Ophthalmicus Successfully Treated with Aureomycin. T Benedek —p 491
Treatment of Malaria in Temperate Climate S B Lindsey and L. M Bevins —p 494
Intestinal Parasitic Infection in Military Personnel of the U S Marine Corps W W Taylor Jr —p 495

Complications Following Prostatic Surgery —Of 600 patients who had undergone prostatectomy during a five-year period (1945 1950), 157 returned questionnaires that could be used in an analysis An attempt was made to evaluate the patient s complaints, emphasis being placed on the symptoms of incontinence and impotence There were cross-checks in the questionnaire on the validity of the symptom and the reliability of the patient Each case was further checked against the hospital record, and no case was included in which less than four months had elapsed since the surgical treatment A transurethral electroresection was done in 80 patients, conservative perineal resection in 48, total and radical perineal operation in 19, suprapubic operation in seven, and retropubic operation in three A total of 19 1% of these patients had either stress or total incontinence following their operation and had to wear a pad or some appliance Prior to surgery, 8 9% of the patients were classified as impotent Following surgery an additional 32 5% had been made impotent A decrease in sexual activity was noted by 63 1% of the cases following prostatic surgery In some instances age may have colored the memories of the patients, especially with regard to their preoperative condition

Minnesota Medicine, St. Paul

34 621-724 (July) 1951

From Stone Ax to Atom Bomb J F Norman —p 641

SYMPOSIUM ON ACUTE ABDOMINAL CONDITIONS

Pathological Aspects P W Schafer —p 645
Roentgen Diagnosis L. G Rigler —p 650
Surgical Aspects. O G McDonald —p 661
Urological Aspects T H Sweetser —p 663
Gynecological Aspects. J J Swendson —p 664
The 1950 Cancer Statistical Study by the Minnesota Department of Health N O Pearce and D S Fleming —p 668
Ear Findings in Brain Tumors. H A Brown and J G Love.—p 672.

New England Journal of Medicine, Boston

244 893-924 (June 14) 1951

Influence of Small Rural Hospital on Advancement of Surgery in the New England States E. H Risley —p 893
Perforated Peptic Ulcer Study of Indications for Nonsurgical Treatment in Selected Cases R H Vaughan and R Warren —p 898
Chronic Dissecting Aneurysm of Aorta Resembling Chronic Rheumatic Heart Disease E Levine M Stein G Gordon and N Mitchell —p 902
Trauma of Phrenic Vessels G H Donnelly C F Stewart and S R LoVerme —p 906
Schizophrenia and Hormones Some Present Trends Their Implications and Backgrounds W Malamud —p 908

244 925 958 (June 21) 1951

Accurate Method for Rapid Blood Grouping of Large Numbers of People F H Allen Jr L. K. Diamond and H J Madden —p 925
Exploratory Culdotomy—Alternative to Laparotomy Proposed Aid to Early Detection of Pelvic Cancer J B Boyle.—p 930
Management of Diabetic Neuropathic Joints H Parsons and W S Norton II —p 935
Review of New Drug Therapies in Treatment of Alcoholism J Thimann —p 939
Pancreatic Surgery R B Cattell and K W Warren —p 941

New York State Journal of Medicine, New York

51 1233 1360 (May 15) 1951

Clinical Review of 300 Gallbladder Operations H H Romack N Krumdieck and D M Vickers —p 1287
Fifteen Year Analysis of Maternal Mortality at Flushing Hospital 1935 1949 F Carpenter and G Schaefer —p 1294
Digitalis and Mercurials Alone and in Combination in Management of Severe Congestive Failure with Regular Sinus Rhythm and Slow Heart Rates H Gross S I Kreps and E B Weiner —p 1299
Evaluation of Roniacol Tartrate in Arteriosclerosis Obliterans I H Richter M Fogel and H Fabricant —p 1303
Use of Sodium in Management of Chronic Congestive Failure I S Eskwith —p 1305
Further Experiments on Formation of Skin Tolerance to Antihistaminic Drugs. S Monash and A Guiducci —p 1309
Topical Treatment of Tinea Capitis I J Mintzer and A Eliassow —p 1310
Topical Estrogens in Acne Vulgaris A J Philip —p 1313
Effects of Priscoline in Diabetes Preliminary Study M I Sasson —p 1315

51 1361-1456 (June 1) 1951

Radioiodine Principles of Diagnosis and Treatment of Thyroid Disease B J Duffy Jr and J W Howland —p 1399
Simple Test for Occult Varicose Veins P H Rakov —p 1405
Newer Therapeutic Procedures in Pruritus Ani R. Turell —p 1408
Treatment of Chronic Congestive Heart Failure with New Meralluride (Mercuhydrin) Suppository E Levokove and L A Sarrow —p 1410
Desoxycorticosterone Acetate and Ascorbic Acid J R Dordick J S Rechtschaffen and S Alexander —p 1413
Primary Bronchogenic Carcinoma of Lung C A Ribaudo —p 1416
Conduct of Internist Toward Patient and His Family When Diagnosis of Malignancy is Established S Leibowitz.—p 1421
Incisional Hernia H L Skinner and J L Elliott —p 1424

Ohio State Medical Journal, Columbus

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Present Status of Penicillin in Management of Syphilis R L Kile —p 522
Amino Acids in Treatment of Chest Infections F H Newton —p 523
Newer Concepts of Pulmonary Circulation in Man H A Zimmerman —p 525
Psychiatric Referral When and How L Pillersdorf —p 527
Purpose of Receiving Hospitals E E Elder and M Benimoff —p 531
Wheat Germ Oil Concentrate as Aid in Reduction of Pregnancy Complications. W M Silbernagel and J B Patterson —p 533

47 609 696 (July) 1951

Radiological Defense Against Atom Bomb D A Russell —p 633
*Hypertension and Arterial Disease P S Ross —p 639
Standardization of Technique and Interpretation of Tuberculin Test. S W Simon and L Rinard —p 645
Bronchial Asthma Due to Food Allergy C K Walter —p 650
Art in Plastic Surgery of the Nose J G Himmel —p 652
Economics of Industrial Ophthalmology I H Stolzar —p 654

Hypertension and Arterial Disease —This is a study of 88 patients (14 men and 74 women) with hypertension, most of whom were ambulatory They were followed for an average of 32 months but some were studied for over 100 months The patients were classified into three weight groups overweight, underweight and normal weight The overweight group have more coronary disease, more left ventricular hypertrophy higher average blood pressures, lower average age, more elevated blood cholesterol more frequent and more serious retinal vessel changes and higher death rate from associated complications than do either of the other two groups Cerebral vascular accidents seemed particularly common in the overweight group, and coronary deaths were commonest in the underweight group Fifty six patients were treated with potassium thiocyanate No effect on blood pressure was noted in 39 of these 56 patients, there was a slight lowering in 14 and there was a rise in three patients Salt restriction was tried with unimpressive results in 32 patients but the diet was probably not adhered to closely Sedatives of various types were tried on 21 patients, there was no effect in 14 cases a slight lowering effect in seven cases Loss of weight caused lowering of pressure in seven of 19 patients No effect was observed in 12 patients This result surpasses that of any of the other treatments though it is still only about 40% The results obtained with the veratrum alkaloids and the nitrite groups were not impressive It was found that of 63 patients, 39 could not tell when the blood pressure was up or down 14 actually felt better when the pressure was up four patients were equivocal, sometimes feeling better when the pressure was up and sometimes when it was down, and only six patients felt consistently better when the pressure was down Hypertension should be regarded merely as a condition occurring in patients in whom the arterial pathology occurs earlier, more frequently, and more severely than in the nonhypertensive group of patients, the latter having the same vascular degenerations but to a lesser extent Hypertension is important not in itself, but because of the underlying and associated vascular changes

Proc Soc Exper Biol & Med , Utica, N Y

77 193-378 (June) 1951

Radioactive Iodinated Human Serum Albumin as Tracer Agent for Diagnosing and Localizing Intracranial Lesions S N Chou J B Aust G E Moore and W T Peyton —p 193
*Diminished Adrenal Cortical Function in Diabetes as Shown in Eosinophil Response to Stress of Surgery J B Field and A Marble —p 195
Effect of Hypophysectomy on Intrathyroidal Metabolism of I^{131} A Albert and N Lorenz.—p 204
Apparent Discrepancies in Evaluation of Adrenocorticotrophic Hormone (ACTH) Activity by Two Assay Methods W O Reinhardt and Choh Hao Li —p 229
Purified Fraction of Thioflavine S (Vasoflavine) Valuable Agent for Visualization of Blood Vessels J B Moses A J Emery and J U Schlegel —p 233
Passive Sensitization of Human Skin by Sera of Guinea Pigs Anaphylactically Sensitized to Ovalbumin W B Sherman and E J Coulson —p 245
Certain Relationships Between Pteroylglutamic Acid Citrovorum Factor and Cortisone D S Gaines H P Broquist and W L. Williams —p 247
Persistence of Virus in Urine as Factor in Spread of Infectious Hepatitis in Dogs G C Poppensiek and J A Baker —p 279
Some Early Nuclear Effects of Ionizing Radiation S Warren M W Holt and S C Sommers —p 288
Failure of Aureomycin in Treatment of Experimental Leishmaniasis Nai-Chu Chang and Feng Ting Liu —p 299
Effect of Protein Depletion upon Enzyme Activities of Organs N Millman.—p 300
Relation of Protein Nutrition to Healing of Experimental Wounds M B Williamson T H McCarthy and H J Fromm —p 302
Measurement of 'Extracellular Fluid Space in Infants by Equilibration Technic Using Insulin and Sodium Ferrocyanide P L Calcagno G S Husson and M I Rubin —p 309
Ascorbic Acid and Hyaluronidase Hyaluronic Acid Reaction E Reppert J Donegan and L. E. Hines —p 318
Some Hormones Involved in Elaboration or Activation of Mammary Spreading Factor J R. Elliot and C W Turner —p 320
Clinical and Metabolic Study of 17 Hydroxycorticosterone (Kendall Compound F) Comparison with Cortisone G A Perera C Ragan and S C Werner —p 326
Radioactive Sodium Clearance as Test of Circulatory Efficiency of Tubed Pedicles and Flaps H Conway B Roswit R B Stark and R Yalow —p 348
Effect of Cortisone on Serum Non-Specific Hyaluronidase Inhibitor Following Surgical Trauma J W Cole and W D Holden —p 363

Adrenal Cortical Function in Diabetes.—The levels of circulating eosinophils as a measure of adrenal cortical response to the stress of surgery were followed in 25 diabetics and 13 non diabetics All the nondiabetics had eosinophil levels that were decreased more than 50% of the preoperative count Ten of the diabetics showed diminished adrenal cortical function, as indicated by an eosinophil count on the second postoperative day that was depressed less than 50% of the preoperative level Four hour corticotrophin (ACTH) and cortisone tests were done on five of these 10 diabetics and confirmed the reduced adrenal cortical reserve The adrenal cortex was capable of responding normally to the initial stress of surgery, but its reserve capacity was insufficient to maintain the eosinopenia for 48 hours The abnormal adrenal response seems to be correlated with the duration of the diabetes It is possible that this decrease in the activity of the adrenal may be a compensatory change resulting from the relative insulin deficiency

Psychiatry, Washington, D C

14 127-254 (May) 1951 **Partial Index**

Knowledge Morality and Destiny J Huxley —p 129
Hysterical Manifestations in Schizophrenic Illness. D Noble —p [illegible]
Two Adolescents Experiment in Interpretation of Interviews D Riesman.—p 161
Political Involvement and Interpersonal Relations. R L Coser —p 213
Study of Need Fulfillment on Mental Hospital Ward C G Schwartz. M S Schwartz and A H Stanton —p 223

Public Health Reports, Washington, D C

66 823 850 (June 29) 1951

Nutrition in Heath Conference of Preschool Child P C Jeans —p 834
Preparation of Antisera for Detection of Somatic Antigens of Salmonella Cultures P R Edwards.—p 837

66 851-882 (July 6) 1951

Central Cooperative Clinic Study of Follow Up in Tuberculosis Control I Background Objectives, and Methodology D Ottenberg K. Boucot W E Chamberlain and others —p 853
Effect of PAS on Emergence of Tubercle Bacilli Resistant to Streptomycin F Beck —p 863

66 883 910 (July 13) 1951

Recent Court Decisions on Municipal Milk Inspection M Stein and I L Sonenshein —p 898

Rhode Island Medical Journal, Providence

34 293-348 (June) 1951

Homo Medicus C J Ashworth —p 309
The Compulsory Proposal Its Advantages C Frothingham —p 312
The Compulsory Proposal Its Disadvantages L S Goin —p 313
Co-Existent Sarcoma and Carcinoma of Uterus—Case Report G A Croce and E Meyer —p 316
Congestive Failure and Liver Dysfunction A Caputi and D Littman —p 319

Rocky Mountain Medical Journal, Denver

48 481-564 (July) 1951

*Menopausal Syndrome Treated with Alpha-Tocopherol Report of Two Cases and Review of Literature S H Sikkema —p 505
Serological Sampling for Human Brucellosis in New Mexico L M Shields and M Boggess —p 508
Ophthalmologic Urgencies and Emergencies P C Kronfeld —p 511
Use of Dihydroergotamine Methanesulfonate (DHE-45) in Shortening Labor M J Baskin and F W Crealock —p 514
Guideposts in Control and Prevention of Rabies R L Cleere —p 516
New Approach to Treatment of Atrophied Muscles Resulting from Poliomyelitis Preliminary Report. M Shmugar —p 519
Practical Aspects of Fluid and Electrolyte Balance in Surgery R M du Roy —p 521
An Approximate Suture G B Chandler —p 526

Alpha Tocopherol for Menopausal Syndrome —Histories of two women are presented in whom severe menopausal symptoms were controlled by alpha tocopherol Estrogen therapy was believed to be contraindicated in these patients A review of the literature shows that 365 cases treated with alpha tocopherol have now been reported, with about two out of three patients being greatly relieved The mechanism of this control of symptoms is obscure Vitamin E does not have estrogenic effects in rats or humans Evidence as to its possible endocrine effects is contradictory It was suggested that the effects of vitamin E are not mediated through hormonal mechanisms The author feels that alpha tocopherol is a safe medication and should be tried in cases with contraindications to the use of estrogens

Southwestern Medicine, El Paso, Texas

32 217 252 (July) 1951 Partial Index

*Trichobezoar Report of One Case A D Maddox —p 231
Problems of the Profession with Regard to Medical Preparedness G Turner —p 232
Clinical Evaluation of a Purified Preparation of Ovine Pituitary Gonadotrophins Preliminary Report T O Rowley and L J De Merre —p 234
Role of Family Doctor in Mental Health. L Schnur —p 238
Report of 1 000 Stool Examinations L B Dowell and J Gilliland —p 239

Trichobezoar —The case reported here is that of a 10 year old girl who had been biting her nails and chewing on the ends of her long hair She complained of feeling sick all the time, of having no appetite, and of feeling a knot in her stomach She was undernourished and appeared nervous and apprehensive There was a large firm mass in the epigastric region, which seemed to be in the stomach X ray studies with barium outlined the stomach and also the mass, which completely filled it At operation a hairball was found and easily shelled out The girl was discharged one week after operation Two months later she looked greatly improved, having gained about 10 lb (4 5 kg)

Surgery, Gynecology and Obstetrics, Chicago

93 1-128 (July) 1951

*Some Basic Observations on Venous Thrombosis and Pulmonary Embolism J McLachlin and J C Paterson —p 1
Study of Effect of Vagotomy on Experimental Pancreatitis. W R Schaffarzick H H Ferran and R S McCleery —p 9
Tendon Sheath Patterns in the Hand Anatomical Study Based on 367 Hand Dissections E W Scheldrup —p 16
Procedure for Total Biopsy of Doubtful Polypoid Growths of Lowest Large Bowel Segment R T Crowley and D A Davis —p 23
Chronic Hypertrophic Spondylosis of Cervical Spine with Compression of Spinal Cord and Nerve Roots J A Epstein and L. M Davidoff —p 27
Subtrochanteric Osteotomy for Nonunion of Neck of Femur F C Reynolds and T Otto —p 39
Surgical Management of Traumatic Chylothorax H B Shumacker Jr and T C Moore —p 46
Effects of Hypercapnia and Hypoxia on Response of Heart to Vagal Stimulation W G Young Jr W C Sealy J Harris and A Botwin. —p 51
Percutaneous Femoral Artery Catheterization in Man with Special Reference to Aortography E. C Peirce II —p 56
*Procaine Amide for Prophylaxis and Therapy of Cardiac Arrhythmias Occurring During Thoracic Surgery S I Joseph M Helrich H J Kayden and others.—p 75
Diffuse Familial Polyposis of Colon C W Mayo J H DeWeerd and R J Jackman —p 87
*Use of Calcium Chloride in Treatment of Cardiac Arrest in Patients J H Kay and A Blalock —p 97
Relation of Body Fluid Compartments to Body Fat J D Hardy, P K Sen and D L. Drabkin —p 103
Method for Resection of Thyroglossal Duct. J Fallon —p 107
Analysis of 445 Cases of Internal Podalic Version. J C Jarrett and K R Brandeberry —p 109

Venous Thrombosis and Pulmonary Embolism —The material for the present study was obtained from routine autopsies on 100 unselected male patients over the age of 40 Special attention was given to the lungs and to the veins of the lower extremities The pulmonary arteries and their branches were carefully searched for pulmonary emboli by the open book method All gross emboli were confirmed by microscopic examination, and an attempt was made to compare their ages with those of the primary thrombi in the leg veins The veins were removed in continuity from the lower end of the inferior vena cava to the posterior tibial vein at the level of the internal malleolus The specimen in one piece was laid out flat, opened with a fine pair of scissors, and inspected for thrombi and for other lesions The opened veins were then stretched out and immersed in 10% formaldehyde All suspected thrombi were sectioned and examined microscopically to prove their ante mortem occurrence When points of small incipient thrombosis were encountered, the thrombosed segments were removed, in toto and subjected to complete serial section There were gross demonstrable venous thrombi in 34% of the cases Of these cases a pulmonary embolus was found in 56% (19% of the total series) The incidence of thrombosis was the same for various decades Seventy three per cent of the thrombi arose in the thigh and pelvic veins Nearly one third of all thrombi arose in relation to a valve pocket The diagnosis of primary pulmonary thrombosis, as a disease entity, is unwarranted Surgical ligation of the superficial femoral veins, either prophylactically or therapeutically, does not appear to be justified The separation of thrombophlebitis and phlebothrombosis, because of a supposed difference in an embolic potential, is not warranted Serial section studies have failed to show any underlying intimal changes that would act as a precipitating factor in thrombus formation

Procaine Amide for Cardiac Arrhythmias in Thoracic Surgery —Ordinarily harmless rhythmic abnormalities may be potentially dangerous during surgery and general anesthesia Among the drugs used for ventricular arrhythmias, intravenously administered procaine has given the best results The amide of procaine (pronestyl) may be administered in relatively large doses and will exert the effects of procaine for prolonged periods It was used in the prophylaxis and therapy of arrhythmias in patients subjected to thoracic operations under cyclopropane anesthesia It was given orally to 22 patients in doses of 1 0 to 2 0 gm , one to two hours prior to induction The control series consisted of 25 patients During thoracotomy an additional 1 0 gm was administered intravenously in 10% solution, in divided doses, in order to achieve peak plasma concentrations of procaine amide at the time intrathoracic manipulations began More of the drug was administered intravenously during the subsequent maintenance period for therapy or for pharmacologic study Prophylactic administration reduced the incidence of all types of arrhythmias, of ventricular arrhythmias especially, and of ventricular tachycardia particularly The drug was used in the treatment of ventricular arrhythmias in 17 patients Intravenous injections were made 29 times, with reversion to normal sinus rhythm 25 times The four ventricular arrhythmias that persisted reverted to normal sinus rhythm after a second injection The dosage ranged from 0 1 to 1 0 gm and averaged 0 5 gm Procaine amide was used only after measures other than drugs had been unsuccessful, and it was more effective than all other measures combined, being particularly effective in patients who had received the drug prophylactically The authors present the histories of seven patients in whom the drug proved therapeutically effective They analyzed the factors concerned in the onset of arrhythmias during cyclopropane anesthesia and found that inadequate ventilation appeared to be the chief factor

Calcium Chloride in Treatment of Cardiac Arrest.—Kay and Blalock cite histories of four patients to show the efficacy of 2 to 4 cc of 10% calcium chloride in improving heart contractions in impending ventricular standstill and in the treatment of ventricular standstill occurring spontaneously or following the successful electrical defibrillation of a heart in ventricular fibrillation The case of a girl, 5, demonstrates the therapeutic value of 4 cc. of 10% calcium chloride after 0 5 cc of 1 1000 epinephrine hydrochloride failed in three attempts in the treatment of ventricular standstill In a 14-month old child, 3 cc of 10% calcium chloride restored normal cardiac contractions after 0 5 cc of 1 1000 epinephrine chloride had failed to do so Although the heart had not entirely stopped beating when the calcium chloride was given to this patient, the blood pressure was not obtainable The case demonstrated dramatically the improvement in cardiac function following the injection of 3 cc of 10% calcium chloride In the fourth patient, 2 5 cc of 10% calcium chloride injected into the left ventricular cavity restored a normal heart beat after 0 5 cc of 1 1000 epinephrine hydrochloride failed Shortly afterward the heart beat became weak and 0 5 cc of 1 1000 epinephrine hydrochloride improved the cardiac contractions Calcium chloride is not necessarily superior to epinephrine hydrochloride, but the armamentarium of the surgeon should include several cardiac stimulants Irrespective of the cardiac stimulant used in the treatment of ventricular standstill, vigorous cardiac massage must be continued until an effective beat has been restored

Western J Surg , Obst & Gynecology, Portland, Ore

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*Placental Findings Associated with Erythroblastosis Fetalis. E B King —p 192
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Dramamine in Nausea and Vomiting of Pregnancy E. W Cartwright —p 216
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Obesity Problem and Treatment H S Douglas —p 238

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Abdominal Bullet Wound Case Report P G Creese —p 309
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Placental Findings in Erythroblastosis Fetalis.—Among 5,945 pregnant women whose Rh status was investigated, 845 were Rh negative In 88 (or over 10%) of these 845, more than an isolated trace of antibodies developed during pregnancy It was possible to compare the fetal outcome with the placental findings in 74 cases The significant microscopic placental abnormalities included increased numbers of nucleated red blood cells in the fetal vessels, edema of the stroma, abnormally large villi, a relative decrease in the number of fetal vessels, clubbing of the villi, persistence of the Langhans' layer, and the presence of Hofbauer cells At least one of these abnormalities was present in 31 of 37 placentas in which hemolytic disease of the newborn had been definitely diagnosed and also in seven of 22 cases in which there was no evidence of erythroblastosis fetalis Of the 24 patients whose placentas evidenced two or more abnormalities, 20 had infants with proved hemolytic disease, two had infants with a questionable diagnosis, and two had normal infants The increased incidence of two or more placental abnormalities in the mothers whose infants died from erythroblastosis fetalis in contrast to those who survived suggests that this observation is of prognostic value It is felt that most of the placental changes are the direct result of a reaction to the circulating maternal antibodies rather than being secondary to the fetal disease

Yale Journal of Biology and Medicine, New Haven

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Nitrous Oxide Method for Measurement of Cerebral Blood Flow and Cerebral Gaseous Metabolism in Dogs. W R Page W J German and L F Nims —p 462
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Suggestions Concerning Use of Subclavian Which Arises from Aorta in Treatment of Tetralogy of Fallot H B Shumacker Jr —p 486
Frontal Lobe Surgery in Treatment of Intractable Pain Critique J P Murphy —p 493
Fibrous Dysplasia of Bone Neurosurgical Consideration in Two Cases O A Turner —p 501
Studies on Metabolism of Cardiac Muscle from Animals in Shock W J Burdette —p 505
Present Status of Tocopherol and Calcium for Prophylaxis of Postoperative Phlebothrombosis J H Kay —p 515

Pulmonary Resection for Tuberculosis—Forty patients with pulmonary tuberculosis were subjected to pulmonary resection on the thoracic surgical service at the New Haven Hospital The two earliest patients had tourniquet and mass ligation of the hilar structures, all subsequent cases were treated by individual ligation techniques A four-rib to 10 rib thoracoplasty usually was performed after pneumonectomy if it had not already been done Streptomycin was given to 33 of the patients 11 of these received it both before and after the resection, the remaining 22 only after the operation One patient had two lobectomies in separate operations, that is, a total of 41 resections was done on 40 patients Twenty six pneumonectomies and 15 lobectomies were done The indications for the resections were failure of thoracoplasty in 13 patients, tuberculous bronchiectasis with or without bronchostenosis in 12, uncontrolled cavitation in eight, tuberculoma in two, suspected tumor in three, and fibrocaseous disease in one In the patient in whom resection was done in 1936 bronchiectasis had been diagnosed, but the resected specimen disclosed tuberculous disease Twelve of the 40 patients had postoperative complications such as bronchopleural fistula, empyema, pulmonary spread, and wound infections Seven of these patients belonged to the group of eight with uncontrolled cavities most of whom had several complications and three of whom died It is felt that pulmonary resection has earned a definite place in the therapy of pulmonary tuberculosis Acceptable indications include thoracoplasty failure bronchiectasis with or without bronchostenosis, chronic empyema with destroyed lung tuberculoma and suspected tumor Because of the unfortunate results of resection in that group of eight patients with uncontrolled cavities, active parenchymal infiltration, and highly positive sputum, it is felt that primary resection is not at present the ideal treatment for such patients

FOREIGN

Acta Medica Scandinavica, Stockholm

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Efficacy of Penicillin and 2 Sulfanilamido 5 Methyl 1 3 4 Thiodiazole (Lucosil) in Treatment of Erysipelas Comparative Study of 150 Cases. O Mortensen —p 465
Mortality and Incidence of Gastric Carcinoma Among Patients with Pernicious Anemia in Denmark J Jørgensen —p 472

Arterial Hypertension in Unilateral Renal Disease —That unilateral renal disease may cause severe hypertension was established in clinical observations by Ask-Upmark in 1929, before it was experimentally demonstrated by Goldblatt and collaborators in 1934 Many Scandinavian surgeons have found that in some patients only a temporary decrease in blood pressure is obtained by nephrectomy Proper selection of patients for the operation is important The indications for nephrectomy that were established by Schroeder and Fish in 1940 are as follows 1 Arterial hypertension should not have existed for more than two years 2 The renal lesion should be confined to one kidney and should involve diminution of function in that kidney 3 Renal function, as measured by the ability of both kidneys to concentrate urine and by the urea clearance test should be within normal limits 4 There should be no retinopathy and only minimal changes in the caliber of the retinal vessels 5 Arterial pressure should be persistently elevated These criteria were present in the author s patients, a girl 14 with rather severe hypertension and with headaches, vomiting, and dizziness for two years There was no increase in height and weight in this period After removal of a small, atrophic right kidney of a pyelonephritic contracted type the blood pressure fell and remained at normal values (100/70) for two years after the operation simultaneously all the patient's complaints disappeared There was a rapid increase in height and weight This appears to be one of the few cases of unilateral renal disease with arterial hypertension in which nephrectomy has been performed in time to reduce the blood pressure before irreversible changes occurred in the other kidney According to Ask Upmark this disease occurs most frequently in girls and is supposedly due to a congenital anomaly of the right kidney

Isolated Pulmonary Stenosis.—In recent years isolated pulmonary stenosis without other malformations has been recognized more frequently The 21 cases of isolated pulmonary stenosis reviewed were discovered among 250 patients with congenital heart disease Catheterization proved to be the decisive factor in the diagnosis, since it makes it possible to ascertain the type of stenosis whether valvular or infundibular There were 12 males and nine females, the youngest 4 years old and the oldest 38 The complaints were slight, particularly when compared with patients with a combination of pulmonary stenosis and venous arterial shunt Heart symptoms were frequent but generally not incapacitating There were dyspnea occasional palpitations, and precordial pain on severe or moderate exertion The patients were not cyanotic Clinical examination of the heart disclosed bulging of the precordium in about one-fourth of the patients All the patients had a harsh systolic murmur, which, as a rule, was strong, with maximal intensity near the pulmonic area The electrocardiogram in half the patients showed right axis deviation The roentgenological picture was somewhat variable, a prominent second left arch and normal or thin hilar shadows being found in two-thirds of the patients The prominence indicates a poststenotic dilatation This report and other recent reports indicate that isolated pulmonary stenosis is not so rare as it formerly was thought to be Since the present report was completed, the authors have seen 10 additional patients with isolated pulmonary stenosis This brings the total to 31 cases among 340 patients with congenital heart disease

Archiv fur klinische Chirurgie, Heidelberg

268 243 340 (No 3) 1951 **Partial Index**

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Clinical and Histological Observations in Chemotherapy of Malignant Tumors R Frey J Fischer Wasels H J Streicher and others —p 282
Penicillin Therapy of Acute Hematogenous Osteomyelitis of Children and Young Persons P Blümel and W Schüler —p 299
*Synovioplastic Sarcoma Originating in Articular Capsules and in Synovial Bursa F K Kempf —p 321

Resection of Thrombosed Section of Artery.—The therapeutic value of resection of a thrombosed section of an artery in disturbances of the peripheral blood circulation is discussed on the basis of observations on 12 patients with impaired circulation of a lower extremity resulting from endangiitis or arteriosclerosis Clinical observations and measurements with the skin thermometer revealed that during arterial resection and for as much as 24 hours afterward the circulation was impaired, particularly in the area of the threatened peripheral portion of the extremity After complete resection of the thrombosed arterial section, measuring from 3 to 35 cm, the circulation briefly improved in four patients, in five the condition became worse, and in three there was no change Four patients required amputation of the thigh A subsequent resection of the sympathetic trunk in four patients produced improvement in the circulation and also in the subjective symptoms in three of them In four patients, in whom a resection of the sympathetic trunk had been ineffective, the arterial resection also had no effect Resection of a thrombosed portion of an artery appears to be of no value in the treatment of impaired peripheral blood circulation of the lower extremity The temporary improvement occasionally observed is probably caused by the wound hyperemia and by the splitting of the constricting vascular sheath and of the adductor canal The theory that vasoconstricting stimuli originate in the thrombosed artery is contradicted not only by the lack of therapeutic response but also by the long-standing bilaterality of the lesion with symptoms occurring on only one side and by the fact that when arterial resection has been ineffective subsequent resection of the sympathetic trunk frequently counteracts the functional spasticity It is assumed that the sympathetic fibers are present chiefly in the peripheral nerves because, if the vasoconstrictor fibers pass through the vascular nerve plexus, then the effect of an intervention on the sympathetic trunk should be limited to the site of arterial resection which is not borne out by clinical observations

Synovioplastic Sarcoma.—Two cases of malignant blastoma are reported, one definitely originating in a synovial bursa and the other in the joint capsule or possibly also in a bursa In both the reticulumlike tumor parenchyma consisted of spindle cells One had clefts with a partially developed endothelium In a review of the literature the authors found that neoplasms of the same matrix have been classified as fibrosarcoma with and without endothelium, sarcoendothelioma and synovioma or 'synovialoma " The authors explain the varied histological manifestations of these blastomas as a result of the peculiar character of the matrix of the synovial tissue, the individual cell of which has been designated as synovioblast They believe that the two blastomas described in their report, as well as those reported in the literature, can be classified in one group and can be designated as synovioplastic sarcoma," in accordance with the nomenclature of mesenchymal malignant neoplasms Microscopic examination is required for correct diagnosis Early surgical treatment is essential

Haematologica, Pavia

35 193 298 (No 3) 1951

Lederer s Acute Hemolytic Anemia Anatomicoclinical Study A Merli —p 193
*Subacute and Chronic Type of Hemocytoblastic Leukemia M Austoni and F Ghezzo —p 227
Chronic Erythremic Myelosis G Fradà —p 255

"Nonacute" Hemocytoblastic Leukemia.—The occurrence of 'nonacute' hemocytoblastic leukemia is reported in a woman 43 a man 40, and in a girl 8 The woman had chronic microhemocytoblastic leukemia with mild hyperleucocytosis of 14 months' duration Temperature was normal There were no hemorrhages and no ulcerative necrotic changes in the fauces All of the clinical manifestations, such as asthenia, loss of weight, and hypochondriac pain, were caused by the severe anemia The man had a subacute form of hemocytoblastic leukemia of eight months duration Fever hemorrhages, and ulcerative necrotic lesions of the fauces were observed only in the terminal stage of the disease At this time pronounced hyperleucocytosis was demonstrated while the number of nucleated red blood cells had been normal or only slightly increased during the first months of the disease The girl had a triphasic' form according to Patrassi of six months duration Three stages could be differentiated The first was that of the acute type of leukemia with fever, toxic infection, and ulceration of the fauces The blood picture at this time showed leucopenia and the presence of elements of "lymphoid type, which were probably microhemocytoblasts The second phase was one of remission, and the blood picture was normal In the last stage the disease was acute, exactly as in the first stage, leucopenia and microhemocytoblastic elements were again demonstrated on hematological examination The clinical, hematological, and microscopic study of these three cases confirmed the occurrence of chronic and subacute forms of hemocytoblastic leukemia Massive administration of antibiotics and somewhat cautious administration of sulfonamide compounds is suggested in combination with copious blood transfusions Roentgen therapy seems to exert an unfavorable effect

Journal of Hygiene, London

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Mouse-Virulence of Strains of Salmonella Typhi from Mild and Severe Outbreak of Typhoid Fever H T Findlay —p 111

Lancet, London

1 1375-1422 (June 30) 1951

*Haemophilia in the Female M C G Israëls H Lempert and E Gilbertson —p 1375
Abdominal Emergencies from Spontaneous Rupture of Endometrial Cysts. T Dean —p 1380
Immunisation with Influenza Virus A Vaccines Comparison of Intradermal and Subcutaneous Routes. J C Appleby F Himmelweit and C. H Stuart Harris —p 1384
Myocarditis and Aortic Hypoplasia in Arachnodactyly Report of Case A. G W Whitfield W M Arnott and J L Stafford.—p 1387
*Preparation of Haemopoietically Active Extracts from Faeces. S T E Callender and G H Spray —p 1391
Influence of Thyroxine on Desensitising Action of ACTH and of Cortisone in BCG Infected Guineapigs D A Long A A Miles and W L. M Perry —p 1392.
Acute Puerperal Inversion of Uterus C J Dewhurst and D C A Bevis —p 1394
Reduction of Strangulated Inguinal Hernia C Bowesman —p 1396

Hemophilia in the Female —Hemophilia has been regarded as being limited to males, but there is one possible hereditary combination that can give rise to a female hemophiliac that of a male hemophiliac and a female hemophilia-carrier Two earlier investigations one on 600 and one on 75 families, failed to reveal any female hemophiliacs The general opinion has been that the female hemophiliac, if ever conceived dies in utero There are, however, many published reports of females with a hemorrhagic diathesis whose blood-coagulation time was prolonged Other conditions besides hemophilia may prolong the blood coagulation time, but the steps necessary to exclude these conditions have not been taken in recently reported cases of hemophilialike disease in women In the patient whose case is reported here both parents came from hemophilic but unconnected families The various tests on her blood all gave the results expected in hemophilia and the other possible causes of prolonged coagulation time, namely fibrinogenopenia, parahemophilia and the presence of circulating anticoagulants, were excluded The patient had given birth to a healthy female child without at first, excessive hemorrhage During the puerperium severe hemorrhage occurred and hysterectomy was successfully done The authors believe that the operation was justified since the rate of blood loss from the uterine cavity was so great that it would have been difficult to keep pace with it by blood transfusion The regret felt at removing the uterus in a young woman is tempered in this case by the fact that this woman would have been advised against further pregnancies Two points influenced the outcome of the operation favorably the use of interrupted nonabsorbable sutures for the rectus sheath, without which the wound would probably not have healed, and the avoidance of skin piercing sutures through the apertures of which further bleeding would have taken place

Hemopoietically Active Extracts from Feces —Callender and Spray made an extract from the feces of an untreated patient with pernicious anemia and showed that when injected intramuscularly into another patient with untreated pernicious anemia the extract provoked a hemopoietic response The experiment has since been repeated with extracts prepared from the feces of a normal person and of two more patients with untreated pernicious anemia The method of preparation of the nontoxic extract from feces is described From the effects of these extracts and from the growth stimulating actions of the extracts on micro-organisms, it may be concluded that the active principle is vitamin B_{12} As much of this vitamin could be extracted from the feces of patients with pernicious anemia as from those of normal persons, and, though the proportion lost in the process of extraction is unlikely to be constant, it seems that there is no significant difference between the amounts excreted by the two types of subject

Medical Journal of Australia, Sydney

1 673-708 (May 12) 1951

Report of Mantoux Survey of 'Displaced Persons Migrant Children J P van Leent and P F Hopkins —p 673
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Pathology of Tuberculous Meningitis with Particular Reference to Modification in Pathology Following Treatment with Streptomycin A L. Williams —p 680
*Some Experiences in Use of Adrenaline Test in 51 Cases of Rheumatoid Arthritis L. J A Parr E A Shipton and P White —p 682

Use of Epinephrine Test in Rheumatoid Arthritis —Epinephrine tests according to the Thorn method with minor modifications were performed on 51 patients with rheumatoid arthritis The full test, including the response of the total number of leucocytes, the neutrophil cells, lymphocytes, and eosinophil cells is time consuming It was carried out in only 34 of the 51 patients, while the eosinophil cell response was determined in all patients The typical response to epinephrine in normal persons consists of an increase in the total leucocyte count and in neutrophil cells an increase then a decrease in lymphocytes and a greater than 50% decrease in the number of eosinophil cells, also after an increase Of the 51 patients, seven failed to show the normal eosinopenia and therefore failed to produce adequate cortisone secretion in response to epinephrine This would contraindicate its therapeutic use in such cases Patients who fail to respond to epinephrine stimulation given for therapeutic reasons three or four times a day should respond to cortisone This test may therefore be valuable in the selection of patients for epinephrine stimulation or cortisone therapy Most of the patients with chronic rheumatoid arthritis responded normally to epinephrine, and would thus seem to have normally reacting hypothalamic pituitary adrenal cortex systems The fact that epinephrine can produce peripheral blood changes similar to those produced by cortisone, namely, lymphopenia and eosinopenia and that it causes an increase in the size of the suprarenal cortex gives its therapeutic use a sound scientific basis Pre-epinephrine lymphocytosis was observed in 13 of those patients for whom a full differential leucocyte count was performed The presence of enlarged lymph nodes in Still s disease and frequently in adult rheumatoid arthritis, as well as lymphocytosis suggests a mild degree of so-called status thymicolymphaticus

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

95 1729 1788 (June 16) 1951 **Partial Index**

*Tropical Eosinophilia and Filariasis J H Reisel and J Groen —p 1736
Form of Glaucoma in Young Persons A G Krouwels —p 1745
Case of Fear Hysteria Treated by Short Psychotherapy on Psychoanalytic Basis H Musaph —p 1752

Tropical Eosinophilia and Filariasis.—In a woman living in Sumatra tropical eosinophilia developed Living Microfilariae malayi were detected in the puncture fluid from a varicose lymph node cyst The disorder did not respond to treatment with penicillin or neoarsphenamine, but it temporarily improved following intravenous administration of tartar emetic (antimony potassium tartrate) and cure followed treatment with antimony sodium thiomalate (anthiomaline®) The authors review the literature on tropical eosinophilia, which was first described in 1923 by de Langen and Djamil, who noticed the concurrence of increased temperature and enlargement of spleen with high leucocyte and eosinophil counts in patients in the Netherlands East Indies In 1928 de Langen described more cases of this type and subsequently cases were reported by several other authors Weingarten in 1943 reported what he termed tropical eosinophilia in 81 patients whom he had observed in British India After Weingarten s report several other observers reported similar cases In 1939 Netherlands investigators in the East Indies observed that high eosinophilic counts occurred in patients in whom lymph nodes were found to contain microfilariae Thus there seems to be an etiological connection between tropical eosinophilia and filariasis

New Zealand Medical Journal, Wellington

50 83-180 (April) 1951 **Partial Index**

Past and Future in Preventive Medicine A W S Thompson —p 97
Agnogenic Myeloid Metaplasia of Spleen. K F M Uttley —p 102
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*Investigation and Treatment of High Blood Pressure R Chisholm —p 114
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Diverticula of Duodenum and Small Intestine Report of Case B Innes and M H Jameson —p 139
Acute Abdomen and Trauma H M Karn —p 142

High Blood Pressure —In a patient with high blood pressure the case must be investigated thoroughly before treatment is begun The level and variations of blood pressure must be determined, and the capacity of the patient's arteries to withstand prolonged strain, the rate of progress of the hypertension and the amount of damage already done to heart, kidneys, and brain must be estimated Hypertension will persist throughout the patient's life and is usually slowly progressive Chisholm discusses various treatments He feels that it is almost impossible to obtain an unbiased opinion of the efficacy of sympathectomy in severe hypertension The indications for operation vary from one clinic to another The best results appear to be obtained in early cases of malignant hypertension There is no doubt that good results have been obtained with sympathectomy in a few cases Methonium treatment offers new hope in severe and rapidly progressive cases of hypertension The author believes that there is a large field for combined treatments, such as low salt diet and methonium, which act synergistically

Philippine Medical Association Journal, Manila

27 203 332 (April) 1951

Analysis of 4,302 Cases of Schistosomiasis Japonica T P Pesigan —p 203
Intradermal Test for Schistosomiasis Japonica (Preliminary Report) T P Pesigan P B Putong E G Garcia and C. A Millar —p 212
Studies on Liver Function Tests in Schistosomiasis Japonica T P Pesigan and A M Beltran —p 220
Hematological Studies in Schistosomiasis Japonica T P Pesigan and T C. Banzon —p 227
Evaluation of Fuadin Therapy in Schistosomiasis Japonica T P Pesigan V Basaca-Sevilla M V Pañgilinan and others.—p 234
Field Studies on Treatment of Schistosomiasis Japonica with Nilodin T P Pesigan M V Pañgilinan V P Saniel and others.—p 242

Presse Médicale, Paris

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Attempt to Give a Histochemical Interpretation of Radiosensibility of Normal and Neoplastic Tissues Part Played by Nucleic Acids L Cornil and A Stahl —p 933
Parathyroidectomy and Ankylosing Polyarthritis R Paolucci di Valmaggiore and G Tossati —p 936
*Benign Ulcer of Esophagus L Leger M Gaultier, I Bertrand and P Masse —p 944

Benign Ulcer of Esophagus.—The occurrence of a benign ulcer of the esophagus is reported in a man, 43 The patient complained of dysphagia associated with regurgitation and occasional vomiting, in which no blood was ever demonstrated There was no pain or weight loss Esophageal stenosis was demonstrated on repeated roentgenographic examination The stricture was in front of the seventh dorsal vertebra and was associated with moderate dilatation of the esophagus above and below the lesion A small, round niche was observed immediately above the stricture, notching the right posterior aspect of the esophagus Three biopsies were made with the aid of the endoscope, and two of them revealed an inflammatory condition of the mucosa, while the third showed cryptic cylindric mucosa Esophagectomy was performed, and continuity was reestablished by esophagogastrostomy Heterotopic gastric mucosa and, in addition, fragments of pyloric and duodenal mucosa in the esophagus were demonstrated microscopically It is suggested that the development of the ulcer depended on this heterotopia by some kind of autodigestion Recent studies seem to indicate an increased incidence of benign ulcer of the esophagus, which has usually been considered a rarity Clinical diagnosis has been based on pain, dysphagia, regurgitation, and hemorrhage, pain is of great diagnostic value, but may be absent as it was in the authors' case The presence of a niche on roentgenographic examination and the results of biopsy performed after endoscopic examination will establish the diagnosis of esophageal ulcer The authors do not formally deny the concept that the ulcer of the esophagus may be the result of the digestion by acid gastric juice to which the esophageal mucosa may be subjected, but they do not believe that this process is responsible for all cases The possibility of a short esophagus should be considered, and one should determine the exact location of the ulcer, for which the term ectopic ulcer of the stomach may sometimes be more appropriate than that of ulcer of the esophagus Associated conditions, such as gastroduodenal ulcer or cholecystitis, should be watched for Gastric acidity tests should be performed, and the effect of intensive treatment with atropine on the spasm, the stenosis, or the ulcer should be studied Benign ulcer of the esophagus may take a fatal turn when allowed to progress but with early diagnosis recovery will follow adequate medical and/or surgical treatment

Proceedings of Royal Society of Medicine, London

44 423-522 (June) 1951 **Partial Index**

Biochemical Changes in Obstruction of Colon E W Grahame —p 424
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Treatment of Some Disorders of Pituitary by Radiotherapy A B Wayte —p 450
*Results of Investigations of 81 Patients Treated for Tuberculosis of Foot M C Wilkinson —p 475
Early Changes of Kienböck s Disease of Carpal Lunate Bone F C. Durbin —p 482

Tuberculosis of the Foot —Wilkinson reviews observations on 81 patients with tuberculosis of the foot who were observed between 1931 and 1950 The diagnosis rested chiefly on clinical and radiological evidence, but in 48 patients there were associated tuberculous lesions, and in 50 there was, on admission a cold abscess associated with the bone disease Microscopic examination was performed only in 10 patients, results were positive for tuberculosis Patients whose diagnosis was uncertain were excluded The astragalus was the bone oftenest affected Tuberculosis of the astragalus was usually associated with tuberculosis of the ankle joint and sometimes also with tuberculosis of the subastragaloid joint Tuberculosis of the midtarsal bones was next in order of frequency Most of the patients during the early period received only constitutional treatment A combination of constitutional treatment and operation was used during later years In a third group constitutional treatment was combined with streptomycin, and surgical treatment was added in some of these The author feels that constitutional treatment remains the basic treatment of the severe form of systemic tuberculous disease of which tuberculosis of the foot is a manifestation, that the results can be greatly improved by operation on tuberculous bone, and that streptomycin is a valuable ancillary form of treatment Constitutional treatment requires a long time (average of 3 2 years), but the results are good The advent of antibiotics has not in the author s opinion, altered the fundamental need for constitutional therapy in the treatment of skeletal tuberculosis

Revista Española de Pediatria, Zaragoza

7 161 316 (March April) 1951 **Partial Index**

*Waterhouse Friederichsen Syndrome M Mariño Gallego —p 161
Stages of Child Development from the Point of View of Relative Growth' E Jaso —p 205
Early Diagnosis of Congenital Dislocation of the Hip L Ribó Rius —p 257
A Case of Early Menarche Followed by Early Puberty A González Meneses Pardo —p 265
Ehlers-Danlos Syndrome C. Vázquez and A Arenas —p 275

Waterhouse Friederichsen Syndrome —Mariño Gallego reviews the literature and reports on 15 children with Waterhouse-Friederichsen syndrome ranging in age from 17 days to 8 years, eight being less than one year old Nearly three fourths of the patients were males The onset is usually sudden, the condition appearing extremely grave from the first hours The most constant symptoms were high fever, lividity, cyanosis, particularly of hands and nails hypotension, weak cardiac sounds, tachycardia semicomatose state petechiae spreading rapidly all over the body hypothermia of the extremities, tachypnea, and pain elicitable by palpation of renal areas The striking contrast between cold extremities and the high temperature in abdomen and head is an early sign and an aid in diagnosis There was a high potassium level, normal blood sugar, and severe anemia with leucocytosis, lymphocytosis, neutropenia, and shift to the left Blood culture was done in four cases, only one culture yielding meningococci Bacteriologic examination of the petechiae gave negative results in the two cases in which it was performed Treatment must be begun quickly The condition was so grave and the vascular collapse so severe in some of these patients that treatment could not be as rapid and complete as was desirable All patients were given heat in moderate form, oxygen, and cardiovascular stimulants administered centrally as well as peripherally Hypertonic solution of sodium chloride, blood, or plasma were given when possible Sulfonamides were given by mouth when possible or intravenously or intrathecally when signs of meningitis were present Penicillin, because it was difficult to obtain, was given only to some patients Despite early treatment, no cure was observed Death occurred within six to 50 hours after onset of the disease Necroscopy was performed in eight patients The capsules of the adrenals were found greatly increased in size and weight in every case and had a hemorrhagic and more or less necrotic aspect Meningitic lesions were observed in two cases

Schweizerische medizinische Wochenschrift, Basel

81 589 608 (June 23) 1951

*Occurrence of Allergic Reactions to Treatment with Penicillin and Streptomycin R Schuppli —p 589
Electrophoretic Studies on Normal Pregnant Women and on Women with Late Gestosis E Glatthaar H Suenderhauf and C Wunderly —p 592
Influence of 2 3 Dimercaptopropanol 1 (BAL) on Inhibitory Power of Penicillin and Streptomycin J Giesen and P Koelzer —p 597
Treatment of Coronary Insufficiency in Light of Recent Concepts of Pathogenesis G Schimert.—p 598

Allergic Reactions to Penicillin and Streptomycin.—Allergic reactions in 53 patients treated with penicillin and in seven patients treated with streptomycin are reported on Only two of the patients with allergic reactions to penicillin had been treated previously with penicillin, in all the others the allergy became manifest during the first short course of treatment with penicillin, most frequently about the 10th day after the first injection The seven patients with allergic reactions to streptomycin were nurses who had been in contact with the drug for some time Reactions suggesting general sensitization occurred in 37 of the 57 patients treated with penicillin In 28 these reactions were urticarious, seven patients had noncharacteristic eruptions, three had mycidlike eruptions, and six had reactions suggesting general sensitization associated with mycidlike eruptions and/or eczema The occurrence of mycidlike eruptions suggests that the antibiotics that are products of fungi may cause reactions in man similar to those that occur spontaneously in persons who are carriers of skin fungi and have been sensitized to their products Of 25 patients with penicillin allergy, 23 gave a positive reaction to intracutaneous tests with trichophytin, while only 12 gave a positive reaction to intracutaneous tests with penicillin Of 30 patients with mycosis who gave positive reactions to trichophytin tests, five also gave positive reactions to penicillin tests The increased incidence of allergic reactions to antibiotics suggests that in the future the following rules should be observed 1 Boils, simple pyoderma, and doubtful febrile conditions of short duration are not to be considered as indications for treatment with penicillin 2 Special caution is indicated for patients with mycotic infections, particularly during the summer months 3 Previous occurrence of allergic manifestations following the application of antibiotics should caution against repeated treatment, particularly in patients who have had urticarious manifestations These patients should first be given a small dose of the antibiotic to detect an occasional severe hypersensitivity

Wiener klinische Wochenschrift, Vienna

63 469-484 (June 29) 1951 **Partial Index**

*General or Local Anesthesia for Tonsillectomy in Adults K Kofler —p 472
A Case of Pulmonary Tuberculosis in Presence of Familial Hemolytic Icterus W Danzer —p 475
Simple Microchemical Demonstration of Barbiturates for Clinical Purposes H Kresbach and H Gomahr —p 476

General or Local Anesthesia in Tonsillectomy in Adults —From 25 years of experience, the author has become convinced that general anesthesia has many advantages over local anesthesia in tonsillectomies performed on adults Following are some of these of general over local anesthesia 1 The postoperative reaction of the wound niches and of their closest surroundings is always less, and the postoperative pains are also less severe and of shorter duration Absence of the tissue damaging effect of procaine hydrochloride probably explains both those factors 2 If tonsillar stumps are to be removed, or if a peritonsillar abscess has existed, the operation should always be done with the patient under general anesthesia, because first, the edema produced by the infiltration may cover up small remnants, and, secondly, uniform distribution of procaine hydrochloride is impeded by scars 3 The technique of tonsillectomy is greatly facilitated by complete exclusion of reflexes and by the relaxation of the tissues The operative field is not only painless, but also, because of absence of pressure, almost bloodless, and thus a better survey is provided and there is less likelihood that tonsillar remains are left behind, so that the undesirable after-effects that may result from this are thus avoided 4 The local inflammations sometimes produced by procaine hydrochloride and the possible severe complications resulting from them are avoided In the presence of heart disease tonsillectomy with the patient under general anesthesia is less taxing for the patient than with local anesthesia, because in the latter case the excitement may prove harmful Of course, in the presence of serious heart lesions the heart must be properly prepared for the operation 5 Many observers have found that pulmonary complications are much less frequent when tonsillectomy is done with general rather than with local anesthesia

BOOK REVIEWS

Diseases in Old Age A Clinical and Pathological Study of 7941 Individuals Over 61 Years of Age By Robert T Monroe M D Harvard University Monographs in Medicine and Public Health No 11 Cloth $5 Pp 407 Harvard University Press Cambridge 38 Mass Oxford University Press Amen House Warwick Sq London E C 4 1951

This monograph is a report on a clinical, pathologic and therapeutic survey of the records of all patients over 61 years of age on the medical service of the Peter Bent Brigham Hospital from its opening in March 1913 to March 1943 It includes a consideration of the social and economic problems posed by illness of older people The survey includes the records of 7 941 patients (4,088 men and 3 853 women) Among these there were 1,874 deaths, with autopsy data on 1,171

The first of the 14 chapters presents a review of the general features of the group the 13th chapter is a summary of the medical findings and the last chapter deals with a discussion of the community facilities essential for old people The other 11 chapters deal with diseases of organ systems, nutritional disorders and alcoholism, malignant diseases and venereal diseases

The organization of the geriatrics clinic at the Peter Bent Brigham Hospital is described together with a statement of the basic needs and instruments required for the successful operation of such a clinic

The author states that three fourths of the men and two-thirds of the women claimed general good health throughout their lifetime there is no evidence of a particular constitution predicating the likelihood of one s reaching old age

Considerable space is given to the discussion of cerebral arteriosclerosis heart disease, arthritis and digestive disturbances, as these present peculiarities in older persons Malnutrition and psychoneurosis are prominent features among the patients

Although a major portion of the text is devoted to analysis of the records studied, the author projects the clinical experience gained from the operation of a geriatrics clinic to emphasize particular considerations of important pharmacological principles and therapeutic programs required in the clinical management of older patients

A feature of the monograph that deserves special mention is a discussion of social and economic forces that influence emotional situations and difficulties in adjustment among apparently well but obviously ill, aging persons Suggestions for steps to be taken by communities to cope with these situations are outlined

It is interesting to note the change in employment status of older men over the 30 year interval covered by the study In the decade of 1913 1923, 92 4% of men age 61-65 were gainfully employed, in the decade of 1933-1943, 66 7% were employed Also employment was more numerous up to the age of 80 in the first 10 years than in the last 10 The men who retired at age 61-65 trebled in the 30 year period

It is indicated that there is a growing burden on the hospital imposed by sickness in old age In 1913, one in every 16 admissions to the medical service was over 61 while in 1943 one in every five admissions was over 61 This is an increase of 200% in 30 years and is considerably greater than the increase in the number of persons over 61 in the general population

If the situation in the Peter Bent Brigham Hospital is typical, general hospitals today have 20% to 30% of their beds occupied by patients who are over 61 years of age That is a concentration several times what it is in society at large When one considers that new hospital construction now costs from $10,000 to $25,000 per bed and the daily per capital cost of care is $12 to $18 a day the question is raised as to the need for hospital beds for these older people whose conditions could be handled well elsewhere The author reviews the available nonhospital facilities for the care of the aged, notes their inadequacies, and makes suggestions for the organization of old age centers

This documented book relating actual clinical experience is most timely and should find a large group of readers among the medical profession Implicit in the presentation is that medicine must take its proper place among the social sciences in addition to maintaining its established place among the natural sciences

Diseases of the Endocrine Glands. By Louis J Soffer M.D F.A C P Associate Attending Physician and Head of Endocrine Research Laboratory and Clinic Mount Sinai Hospital New York City With assistance of J Lester Gabrilove M D Research Assistant, Endocrine Research Laboratory and Clinic Mount Sinai Hospital New York City With section on Carbohydrate Metabolism Hypoglycemia and Diabetes Mellitus by Henry Dolger M D and section on Gonads by Arthur R. Sohval M.D *Cloth $15 Pp 1142 with 91 illustrations Lea & Febiger 600 S Washington Sq* Philadelphia 6 1951

This book is intended according to the author s preface, "to bring together our present knowledge ' in endocrinology The author has been assisted by Dr Sohval, who has written the section on the gonads (pp 407 688), and by Dr Henry Dolger, who has written the section on diabetes, hypoglycemia, and hyperinsulinism (pp 903 1077) The authors unfortunately have failed to correlate the basic principles of the subject with its clinical applications in a manner that would please either the student or the general practitioner desirous of specific practical information The book impresses one as having been put together from accumulated notes on various topics without respect to their relative merits or importance and without organization or coherence For example, after devoting over a page to the toxic effects of thiouracil (which has been largely replaced by its derivative), only a short paragraph is devoted to the more important propyl thiouracil The treatment of Addison's disease, to quote a second example, although given in some detail, is so vague and repetitious as to leave doubt in the mind of the reader as to the exact manner in which the various procedures described are to be utilized Over a page is devoted to The Treatment of Addison's Disease with Transplantation of Adrenal Tissue," a procedure that is certainly far from established, as the author himself notes The illustrations which are too few for a good textbook, are in many cases non endocrinological (e g , Fig 8 of an achondroplastic dwarf, Fig. 61 of ectodermal dysplasia) or too poor (e g Fig 38, 82, and 88) to illustrate the points emphasized On the credit side, it may be said that the material included is voluminous, up to date and well documented by exhaustive references to the literature It is regrettable that the authors failed to digest the sound material which they undoubtedly have at their disposal and present it in a more literary and scholarly manner essential in a good textbook

Genetics in the 20th Century Essays on the Progress of Genetics During Its First 50 Years. Edited for Genetics Society of America by L C Dunn Professor in Columbia University New York. Cloth. $5 Pp 634 with illustrations. The Macmillan Company 60 5th Ave. New York 11 1951

This book consists of a series of papers presented at the Golden Jubilee of Genetics held under the sponsorship of the American Institute of Biological Sciences of which the Genetics Society of America is a member The meeting celebrated the 50th anniversary of the rediscovery of Mendel's work which led to the founding of the science of genetics The essays, contributed by 26 American and foreign authorities, trace the development of genetics during the past half-century and survey its actual and potential contributions to human welfare in such varied fields as cancer, disease resistance plant and animal breeding and plant pathology This volume can be recommended for those interested in obtaining a comprehensive view of the astonishing advance made in this specialty during the comparatively short span of 50 years

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The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated

Angewandte und topographische Anatomie Ein Lehrbuch für Studierende und Ärzte. Von Gian Töndury ordentlicher Professor der Anatomie an der Universität Zürich Cloth 70 marks $16 65 Pp 416 with 369 illustrations. Georg Thieme Verlag Diemershaldenstrasse 47 (14a) Stuttgart-O agents for U S A Grune & Stratton Inc 381 Fourth Ave New York 16 1951

This book on applied and topographic anatomy is divided into three major parts, namely, the torso the head and neck, and the extremities The author has attempted to keep the work practical and applicable for both undergraduate and postgraduate students of medicine and surgery He rightfully stresses the importance of embryology and emphasizes the thought that this is the logical approach to understanding complicated adult anatomy He has, therefore, started each chapter with a short section pertaining to the embryology of the given region to be discussed The illustrations are well done and are closely correlated to the text The author mentions the importance of three-dimensional illustrations, however, this thought could have been carried out to a greater degree Wherever possible, roentgenograms have been added to stress certain anatomic relationships The commoner anomalies are described adequately, and the possible explanations for their existence are given in the discussions under embryology The pen and ink drawings on regional lymph nodes and lymph drainage are depicted in simple and refreshing style helped by the use of arrows showing the drainage to a group of given nodes In Fig 117, on page 130, it would have been well to label the posterior cecal artery, since it is the branch herein depicted that gives rise to the appendical artery Fig 279 on page 299, represents the time honored diagram revealing a complete capsule surrounding the thyroid gland In the light of present knowledge this would not be considered correct, since the illustration fails to show the attachment of the pretracheal layer of deep cervical fascia to the thyroid gland

The material has been presented well, showing good planning and excellent cooperation between the author and the artist The paper is good, the binding sturdy, and the print legible It can be recommended as a good collateral volume for anyone who is interested in anatomy and who can read German

Help Yourself Get Well A Guide for TB Patients and Their Families By Marjorie McDonald Pyle M D With foreword by H Corwin Hinshaw M.D Clinical Professor of Medicine Stanford University School of Medicine San Francisco Cloth $3 Pp 235 Appleton-Century-Crofts Inc 35 W 32nd St New York 1 1951

This small book contains a personal message of advice and encouragement to all victims of tuberculosis, but especially to the patient who has just been told that he has tuberculosis The author is well-qualified to give this advice She is a physician and scientist and has been a patient She writes with the sympathy and insight of a fellow sufferer but with the objectivity and medical accuracy that stems from her scientific background and what she writes is readable She leads the new patient through the various periods of adjustment in this chronic disease the initial acceptance of the diagnosis the development of faith in the physician, the acclimatization to the sanatorium and its routine, the maintenance of morale, the planning for rehabilitation and the avoidance of relapse on returning home A program of occupational therapy and amusement for the bed patient is outlined The book is recommended as a valuable prescription for the patient with tuberculosis, and many of its features will be of help to patients with other chronic diseases

Low Sodium Diet: A Manual for the Patient. By Thurman B Rice A.M., M D Professor of Public Health Indiana University School of Medicine Indianapolis, Indiana. Cloth $2 75 Pp 103 Lea & Febiger 600 S Washington Sq Philadelphia 6 1951

This book, written for patients, describes in detail the preparation of low sodium diets The author is an epicure at heart for he takes great care to make the diets palatable therein lies much of the importance of the book

While the format of the book is pleasing it would seem that it could have been less expensive and more convenient if blank paper had been used less extensively The author justifies his claim in the preface that he has had a large experience in writing for laymen The book can be recommended as among the best of the manuals for the patient s use

Pharmaceutical Botany By Heber W Youngken Ph M Ph D Sc D Professor of Biology and Pharmacognosy Massachusetts College of Pharmacy Boston Seventh edition Cloth $7 Pp 752 with 548 illustrations Blakiston Company (Division of Doubleday & Company Inc.) 1012 Walnut St Philadelphia 5 1951

The new edition of this textbook has been revised to include more information on general botany without the reduction of material on pharmaceutical botany A new chapter on metabolism has been added

The opening chapters are concerned with the morphology of the vegetative structures, followed by the chapter on metabolism and then three chapters on the morphology of the reproductive structures of plants There are single chapters on plant environment, plant anatomy, and genetics and evolution

A chapter on taxonomic principles introduces several chapters devoted to discussion of plant classes Throughout the text, tables are included indicating the drugs occurring in different plant families, the genus and species names from which the drugs are obtained, the parts of the plant which yield the drugs, and the habitat of the plants In the chapters on monocotyledons and dicotyledons, only the drug bearing plants are discussed

Appendix 1 is a 10 page discussion of the microscope, its component parts, use, and care Appendix 2 is concerned with histologic technic There is a 40 page glossary, which is a welcome feature Just before the very detailed index is a classified list of reference works

The physician interested in botany and in plant origin of drugs would appreciate this book, but it is emphasized that this is primarily a textbook and only secondarily a reference source

Nerve Impulse Transactions of the First Conference, March 2-3 1950 New York, N Y Editor David Nachmansohn Cloth $3 Pp 159 with 4 illustrations Josiah Macy Jr Foundation 565 Park Ave New York 21 1951

This monograph has been prepared by five authors in as many chapters Harry Grundfest, J H Ivastel, C Ladd Proser, David Bodian, and Henry B Steinbach These chapters deal with electrophysiology, biochemistry, comparative physiology, histology, and ion exchange and permeability

This is the unindexed stenographic report of the conference with the free exchange of opinions and ideas, the interruption of the speaker with questions and often digression into rather distant, though related fields Undoubtedly there is some merit in such a presentation It permits the reader to gain the flavor of the conference, to become a vicarious participant, to a limited degree However, there is no merit in also giving the reader so complete an insight into the colloquialisms of each of the participants, into their variable ability to speak grammatically and express their thoughts syntactically In fact, the ungrammatical expressions, the ambiguity, and the lack of good organization are at times appalling and greatly confuse the reader It is to be regretted that so much money was expended in such excellent press work and binding with so little attention to clarification of the various speakers statements

An Atlas of Anatomy by Regions Upper Limb Abdomen, Perineum, Pelvis, Lower Limb, Vertebrae, Vertebral Column, Thorax, Head and Neck, Cranial Nerves and Dermatomes. By J C Boileau Grant, M C M B Ch B Professor of Anatomy in University of Toronto Toronto Third edition Cloth $12 With 637 plates Williams & Wilkins Company Mount Royal and Guilford Aves Baltimore 2 1951

More than 70 new illustrations have been added to this edition, and 28 old illustrations have been replaced or improved The regions of the body are shown in plastic drawings based on photographs of anatomic dissections with special emphasis on the topographical relation of the various structures Colors added to most of the halftones help to draw attention to details which are concisely discussed in brief legends The Atlas will be used profitably by the student of anatomy together with a more detailed textbook The interest of the clinician will be stimulated by perusal of the beautiful plates and schemes for an always needed brush up of basic anatomic relations More representative illustrations of the brain and its related structures should be added The present grouping The Head and Neck might better be separated into one part, on the head with more emphasis on the brain and another part combining the neck and the back

This atlas has proved its usefulness, is very reasonably priced, and is highly recommended

Lehrbuch der Histologie und der mikroskopischen Anatomie des Menschen Von Philipp Stöhr Jr Professor der Anatomie und Direktor des anatomischen Instituts der Universitat Bonn Cloth 66 marks Pp 528 with 510 illustrations Springer Verlag Reichpietschufer 20 Berlin W 35 *(West Berlin) Neuenheimer Landstrasse 24 Heidelberg Göttingen 1951*

This textbook on histology presents in a relatively small space a wealth of information, comparable to that found in the standard American textbook The material is well-organized, and the style is clear References are omitted There is a large number of excellent illustrations, partly photomicrographs and mostly drawings, many in color The great majority of the illustrations are original, with the exception of the useful three-dimensional drawings of Braus, which assist greatly in the plastic understanding of the topographic relations However, not only the illustrations should make this new German textbook interesting to the American reader, but also the extensive discussion that the nervous system and especially the peripheral nervous system and the terminal nerves in the various parenchymal organs receive These aspects are especially well-illustrated This emphasis on the nervous system is not surprising, in view of the great interest that the autonomic nervous system and its abnormalities are receiving in Germany The author himself has markedly stimulated this interest by his previous work In the discussion of the functional significance of the structure more emphasis is given to the tissues as a whole than to the cells as individual units, a tendency that is again related to the emphasis on the innervation of the tissues or organs In the foreword, synthesis in the histological study is emphasized in contrast to the analytic dissection It is indeed an esthetic pleasure to look through this elegant book

Radiochemical Studies: The Fission Products. Edited by Charles D Coryell Department of Chemistry and Laboratory for Nuclear Science and Engineering Massachusetts Institute of Technology Boston and Nathan Sugarman Institute for Nuclear Studies and Department of Chemistry University of Chicago Chicago Book 1 Parts I II III IV—Papers 1 to 52 Book 2 Part V—Papers 53 to 199 Book 3 Parts V (cont) VI VII VIII—Papers 200 to 336 National Nuclear Energy Series Manhattan Project Technical Section Division IV—Plutonium Project Record Volume 9 Cloth $18 50 Pp 516 517 1315 1316-2086 with illustrations. McGraw Hill Book Company Inc 330 W 42d St New York 18 Aldwych House Aldwych London W C.2 1951

These three volumes, though essentially chemical in content, combine the fascination of a detective story with that of a necropsy for they describe the means used to identify what remains after uranium nuclei have been disrupted by fission, whether in an atomic bomb or in a chain-reacting pile In 336 papers and four appendixes, the technics and results of these identifications are given In Paper 185 for example, Newton, Kant, and Hein review certain facts suggesting the presence of an isotope of praseodymium the necessary chemical work then proceeds according to plan, and it yields a substance with a half life of only 17 5 minutes Although the quantity is small, it suffices to establish the properties of this evanescent material

This new chemistry has opened up enormous fields of research, and it will be a long time before all the possible applications in medicine can be explored Adding to the interest of these volumes is the description (Paper 33) of a laboratory for high radioactivity, with several photographs showing the devices whereby the handling and storing of dangerous fission products has so far been accomplished with amazingly few mishaps

Advances in Biological and Medical Physics Volume II Edited by John H Lawrence and Joseph G Hamilton Cloth $7 80 Pp 348 with illustrations Academic Press, Inc 125 E 23rd St New York *10 1951*

Like its predecessor, this second volume on advances in biological and medical physics is concerned chiefly with applications of nuclear physics in the medical sciences The biological effects of radiations, in particular the carcinogenic effects, are summarized in the light of recent work. Experiments with radioactive forms of carbon, sulfur, iodine, sodium, phosphorus, and iron are reported, and the possibilities of fruitful research on such vexing problems as atherosclerosis are sketched The book does not contain anything of immediate practical interest to the physician, and even a reader with some knowledge of mathematics will be alienated by the peculiar notations exemplified on pages 54 and 55 The work as a whole, however, is the result of profound scholarship and a most valuable contribution

A Handbook on Diseases of Children, Including Dietetics & the Common Fevers By Bruce Williamson M D F R.C P Physician, Children s Dept., Royal Northern Hospital London Sixth edition. Cloth $4 50 Pp 440 with 94 illustrations Williams & Wilkins Company Mount Royal and Guilford Aves. Baltimore 2 1951

This book fills a definite need for a small but authoritative work on the diseases of children for the desk of the general practitioner or others who have an interest in, but not a specialized knoweldge of, the subject The author covers the important aspects of pediatrics in a well written and concise fashion.

Suggested methods of therapy are completely up to-date The illustrations do not compare favorably with the excellence of the text Some are obviously old, and the photographic technique is frequently poor In view of the great importance of malignant lesions as a cause of death in childhood, it is felt that they are given inadequate space in this volume There are other debatable points, such as the importance of status thymicolymphaticus as a cause of death However, in general, this is at present the best handbook on the subject of diseases of children on the market today

La tiroides y sus enfermedades: Publicación del Massachusetts Gener Hospital Por J H Means M D *profesor de la Clínica médica de* Universidad de Harvard Boston Traducción [de la segunda edición e *idioma inglés] de los doctores* Carlos Galli Mainini y Arturo Oñativi Cloth. $180 (Argentine) Pp 614 with 61 illustrations. Ediciones Artecn'c Venezuela 1702, *Buenos Aires* [1951]

The translation of this excellent book should be gratefull accepted by every physician of the Spanish speaking countrie as it represents the magnificent work done by Dr Means at th Thyroid Clinic at Massachusetts The thyroid—its hormone anatomy, physiology, pathology, and relations to other endocrine glands—is discussed in detail and with simplicity an *authority The chapters* are well organized, each ending with helpful résumé and a very extensive bibliography The 31 chapters completely cover every aspect of the thyroid and its diseases

The translation is exceptionally good and the reader has th impression of reading an original instead of a translation Then are few typographical errors for a book of this size, and these are minor

The Housefly: Its Natural History, Medical Importance, and Control *By Luther S West Professor and Head of Department of Biology* Northern Michigan College of Education Marquette Cloth $7 50 Pp 584 with 177 illustrations. Comstock Publishing Co Inc 124 Roberts Place Cornell Heights Ithaca N Y 1951

This is the first comprehensive book on the housefly that has appeared in nearly 40 years The author has summarized the practical points of the older books, together with the vast amount of material that has been published since that time Factors having to do with the life history and breeding of flies are given in detail Many practical suggestions are included in the chapter on public health relations, while a long list of human diseases that flies may possibly transmit is presented The newer insecticides are discussed, with emphasis on the fact that they have not entirely solved the problem, since new generations of houseflies develop a resistance to the insecticide Thus, the older methods of control cannot yet be discarded

Cold Spring Harbor Symposia on Quantitative Biology Volume XV Origin and Evolution of Man Cloth $7 Pp 425 with illustrations. Biological Laboratory *Cold Spring Harbor L I New York 1950*

The present volume consists of a series of papers dealing with the evolution of man with emphasis on the origin of the human stock and the problems of human racial differentiation The symposium represents a collaborative study between geneticists and physical anthropologists and will therefore be of particular interest to workers in these fields The practicing physicians, however, should find much of interest in the contributions dealing with the frequency, extent, and genetic determination of various specific characters that may be of racial significance Included in these papers are a report by Neel on the population genetics of thalassemia and of sickle cell disease, a discussion on the inheritance of blood groups by Race, and a review by Boyd of the traits that can be used in population genetics

QUERIES AND MINOR NOTES

IRRADIATION OF PLASMA

To the Editor —*Please give information about the proved value of irradiation of plasma to a county (population 150-000) blood bank Is it worth $1 600?*

Stuart B Blakely Binghamton N Y

Answer —It is inadvisable to use plasma without subjecting it to ultraviolet irradiation by an approved and tested machine, because of the risk of virus hepatitis It is another question whether the installation of such equipment is economically feasible A community of 150,000 persons may require between 400 and 800 units of plasma annually This amount would justify the purchase price of the machine However, a greater problem is that of having an expert technician to operate and maintain the irradiating equipment If such a skilled person is not available an irradiation installation is not wise

DIAGNOSIS OF PREGNANCY

To the Editor —*How soon after the last menstrual period does a series of three daily injections of neostigmine have significance in the diagnosis of pregnancy?*

J G Bradford M D Montesano Wash

Answer —Three daily injections of neostigmine given about five weeks from the beginning of the last menstrual period will yield a presumptive diagnosis of pregnancy in perhaps 60 or 70% of the cases However, it will yield a far higher incidence of accuracy when given about six weeks from the beginning of the last menstrual period In other words, the test is far more accurate when employed about two weeks after a missed menstrual period

BLUE NEVI

To the Editor —*I would like information regarding blue nevi I have under observation a white woman 36 who gives a history of dermatitis on the left upper arm since she was about 12 This remained static until 1949 when some acceleration of growth was noted A similar acceleration occurred in 1950 with numerous blue black macular to shotty lesions over the outer and upper two-thirds of the left arm and shoulder Intermingled with these are the brownish pigmented macules of the common variety of nevus Reports of two biopsies were blue nevus with no evidence of malignancy '*

William B O Connor M D , St Joseph Mo

Answer —Blue nevi are benign lesions and are no more prone to become malignant than are other nevi When one begins to change in character, either in its size or color a histologic examination should be made of it, for there have been a few cases recorded in which melanoma developed after irritation

LIE DETECTOR TESTS

To the Editor —*Is the lie detector test accepted as reliable and scientific by the medical profession? If not what are the specific reasons for its unreliability?*

M D Maryland

This inquiry was referred to two authorities whose respective replies follow —Ed

Answer —The answer to this question necessarily refers only to those members of the medical profession who have had experience and training in the lie detector' technique Several different types of apparatus are manufactured that are classed as lie detectors Those considered most reliable by specialists in this field are instruments that simultaneously record on a moving strip of paper the rhythm and depth of respiration, the pulse rate and blood pressure, and the resistance of the skin to the passage of a weak current of electricity, which is known as the electrodermal response These physiological phenomena are recorded during a period when no questions are asked the subject and also during the time when he is being interrogated on both relevant and irrevelant questions The apparatus records with a high degree of accuracy changes that occur during this period of questioning

The interpretation of the completed graph is the key to the success of the lie detector technique, and, in that, it is akin to the interpretation of x rays, electrocardiograms, and other scientific tests that detect abnormal physiological responses Consequently, the training, experience, and integrity of the operator who diagnoses the completed graph is of paramount importance in evaluation of the reliability of his interpretation

This apparatus and technique has now been tested by experience in thousands of cases for over a quarter of a century Conducted by a qualified operator this technique for detecting deception has demonstrated a reliability comparable to most physiological examinations that are widely accepted by the medical profession The nature of the examination itself precludes an accurate estimate of the percentage of failures, but, based on the large number of cases in which subsequent events proved or disproved the lie detector diagnosis, the percentage of error is low Among members of the medical profession experienced in this field, the lie detector test is accepted as scientific and as a valuable means of differentiating truth from falsity

Answer —No simple answer can be given to this query as it is worded There is not one lie detector test but several, and there are not reasons for its unreliability but conditions under which it should not be used and cautions to be observed in interpreting the results Lie detectors that provide tracings of blood pressure, respiration, muscular movements, and skin resistance have a sound physiological basis They also have a far sounder psychological basis than the infinite variety of cruelties" used in the past which 'were only uniform in expressing the frustration felt by the prosecutor and police " A simple control procedure can be used to preclude the possibility that idiocy, emotional indifference or delusional states might affect results Other precautions that must be taken and limitations to be expected have been set forth in recent (1950) articles by Floch and by Inbau (J Criminal Law and Criminology) Probably many physicians today will agree with the opinion recorded by Le Moyne Snyder (*Ann Int Med* 18 551 [April] 1943) that ' interrogation by means of the lie detector provides a scientific humane and highly accurate adjunct to criminal investigation '

DECIDUOUS TEETH

To the Editor —*We know that the deciduous teeth should be left in as long as possible If these teeth are down to mere shells and not infected and not painful, are they of value in guiding the permanent teeth and saving space for them or should they be pulled to avoid danger of infection?*

Jackson Herbert M D , Portsmouth Ohio

Answer —The pulp of an actively carious tooth is always in danger of infection If there is no dentist available to remove the decay and restore the crown extraction may be considered with the realization that loss of space may result Ideally, these teeth should be restored by the use of shell crowns so that the crown will serve in mastication and in guiding the permanent successors into correct positions If the crown is not restored, these teeth act only as partial space maintainers If the tooth is extracted and no space maintainer is inserted, the space will be closed in the posterior region of the mouth Therefore, the best procedure is restoration of the crown

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The answers here published have been prepared by competent authorities. They do not however represent the opinions of any official bodies unless specifically stated in the reply Anonymous communications and queries on postal cards cannot be answered Every letter must contain the writer s name and address but these will be omitted on request

SYPHILIS AND PREGNANCY

To the Editor —*A multipara five months pregnant has a strongly positive Wassermann test She is in good health and has no clinical signs of syphilis In 1941 she gave birth to a normal baby a blood test was not taken, and there is no record of a cord Wassermann test In 1943 she again gave birth to a normal baby and there is no record of a blood test on the mother or of a cord Wassermann test In 1946 a prenatal blood Wassermann was found to be 4+, and the patient was treated thoroughly throughout her pregnancy for syphilis She gave birth to a normal baby, and the cord blood gave a positive Wassermann reaction Should this patient be treated for syphilis throughout the remainder of her pregnancy? If so, suggest drugs dosage and interval of treatment*

M D , Pennsylvania

Answer —Whether this patient should now be retreated for syphilis, in view of the fact that she is five months pregnant, depends in part on the character and amount of antisyphilitic treatment given in 1946 and in part on the patient s clinical and serologic status at the moment According to Goodwin and Farber (Necessity for Treatment of Pregnant Syphilitic Women During Every Pregnancy, *Am J Syph Gonor & Ven Dis* 32 409, 1948), 'It is not necessary to administer antisyphilitic treatment to a syphilitic woman during every pregnancy, there is a high degree of probability that the infant will be normal if maternal treatment is withheld (*a*) regardless of the stage and duration of syphilitic infection in the mother at the *time of her original diagnosis and treatment, and (b)* regardless of the interval between the previous treatment and the pregnancy in which it is contemplated that further treatment be omitted, *provided that (a)* the mother has previously received 4 0 gm or more of arsphenamine (or its arsenical equivalent) together with concomitant bismuth, or 2 4 or more million units of penicillin and whether this previous treatment was administered during the previous pregnancy or during a non pregnant interval, and that (*d*) the mother shows no clinical signs of active syphilitic infection, and that (*e*) the mother is seronegative (blood STS) or, if still seropositive, in low titer only (1 to 8 dilution units) A syphilitic woman should be further treated in any pregnancy in which she herself shows clinical evidence of active syphilitic infection, or in which, in the absence of such clinical evidence, she herself has a positive blood STS in a quantitative titer of 16 or more dilution units "

These conclusions were based on a study of 570 pregnancies in 363 women who had previously been treated, but in whom in the 570 pregnancies in question, further treatment was purposely omitted The above data indicate the necessity for determination of the clinical and laboratory status of the patient in question Is she free of clinical evidence of syphilis? What is the quantitative titer of her blood serologic test? With this information a decision as to further treatment can be reached If additional treatment is desirable, it may now be given with procaine penicillin in oil plus 2% aluminum monostearate, given in 10 individual muscular injections of 600,000 units each, to a total of 6 million units These injections may be given daily or every second or third day

The query suggests that further information is desirable in this situation from the standpoint both of the patient herself and of her family It is stated that in 1941 and in 1943 she gave birth to a normal baby This statement implies that these two children have now been examined and have been found to be free of congenital syphilis, although this is not definitely stated If this is the case, it is again implied that the patient may have been infected between 1943 and 1946 Nothing is said of the examination of her husband, and, if this has not been done, it should certainly be done now It is further stated that in 1946 She gave birth to a normal baby, and the cord blood gave a positive Wassermann reaction ' This fact does not establish a diagnosis of congenital syphilis in this infant, and the child should be further studied from this point of view

Finally, there is no mention as to whether the mother herself has had her spinal fluid examined, if she has not, this should certainly be done

NONFATAL CARDIAC RUPTURE

To the Editor —*A colleague told me of the following case, which was quite startling The patient was a middle-aged white male who had the typical clinical course and electrocardiographic findings of acute myocardial infarction The course was stormy The patient went into peripheral circulatory failure during the first day or two but survived and congestive heart failure later developed About the second week, he showed signs of an acute cardiac tamponade Pericardial aspiration yielded pure blood, and a rather large amount was withdrawn During the next few days subsequent taps also yielded large amounts of blood The patient eventually recovered and is now working without overt evidence of cardiac failure The physician who attended the case feels that the patient suffered a rupture of the heart, with the small communication between the ventricle and pericardial cavity eventually healing Is it possible that nonfatal cardiac rupture can occur?*

M D Tennessee

Answer —Rupture of the ventricular wall occurs in a small number (5 to 10%) of patients with acute myocardial infarction As a rule, in such cases death comes quickly with tamponade Recovery must be extremely rare However, it may not always be possible to identify the cases in which this happens, although, of course, if there were much blood in the pericardial sac it should be easily identified, as in the case recorded here Since the tract of perforation is often very tortuous and small, it is not impossible that bleeding may cease and that recovery may take place without any therapy at all other than rest With rupture of the heart by trauma, repair has been effected surgically, but, in the case of acute myocardial infarction, this would presumably be difficult or impossible both because of the hazard of the surgery and also because of the friability of the damaged heart muscle

Other causes for the pericardial hemorrhage (and it seems certain that the blood was removed from the pericardium and not from the heart) are much less likely These include hemorrhagic pericarditis associated with infarction of the pericardium itself and a dissecting aneurysm of the coronary artery with rupture into the pericardium

MIGRAINE

To the Editor —*A patient says that two of her friends have received intramuscular injections of their own urine as a therapeutic step for the treatment of migraine Although the procedure appears to me idiotic I must have some plausible answer to satisfy my patient*

Ralph I Mitchell M D Vineyard Haven, Mass

Answer —There is no reason for supposing that giving a patient injections of his urine would help his migraine

FIBROSITIS AND WEATHER VARIATIONS

To the Editor —*With respect to the query concerning 'chronic lumbago sacroiliac neuritis, and fibrositis of the cervical vertebrae (J A M A July 28 1951), the difficulty in answering this is the fact that none of these is a recognizable clinical entity any more than neuralgia' or muscular rheumatism As to the relation to meteorologic changes I think it was Sir Robert Jones who said that during barometric changes there are changes in blood pressure generally and that in scar tissue the result of trauma or inflammation the arterioles are hemmed in and cannot respond by vascular dilation and contraction commensurately with those in normal surrounding tissues The immediate local disparity in pressure causes pain that goes away with elimination of the disparity which is hastened by soaking the affected part in hot water or, better, by contrast (hot and cold) plunges Theoretically, if the patient is free from pain in hot weather, good advice might be to seek a climate where it is always so, assuming in light of vague diagnosis and "chronic fatigue' that amebiasis and brucellosis have been ruled out*

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